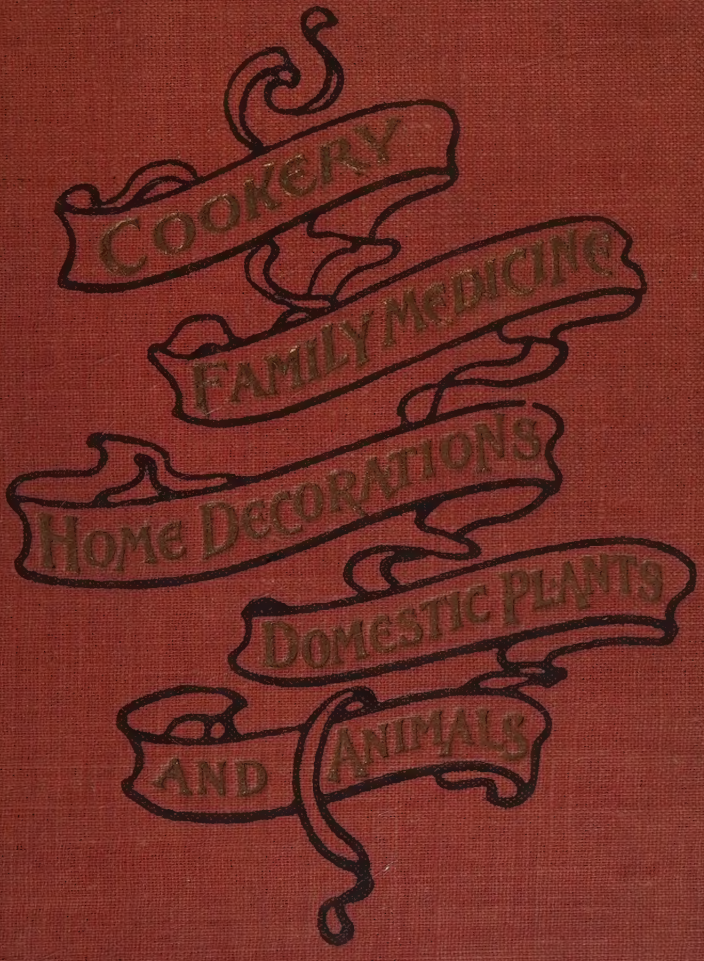
THE STANDARD BOOK OF RECIPES

AND HOUSEWIFE'S GUIDE



HOME LIFE IN OLDEN TIMES

A glance will show the contrast of life in colonial times and at the beginning of the 20th century

The Standard
BOOK OF RECIPES
And Housewife's Guide

COMPRISING

A Complete Cook Book.—Practical Household Recipes, Aids and Hints for Household Decorations; the Care of Domestic Plants and Animals and a Treatise on Domestic Medicine

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THE STANDARD BOOK OF RECIPES

DEPARTMENT I. THE MODEL COOK BOOK

DEPARTMENT II. HOUSEHOLD RECIPES

DEPARTMENT III. ATTRACTIVE HOME DECORATIONS

DEPARTMENT IV. CARE OF DOMESTIC PLANTS AND ANIMALS

DEPARTMENT V. THE PRACTICAL MECHANIC

DEPARTMENT VI. THE FAMILY DOCTOR

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THE MODEL COOK BOOK

THE ART OF COOKING—THE PREPARATION OF FOOD—RECIPES FOR COOKING SOUPS, MEATS AND VEGETABLES—FOR MAKING BREAD, PASTRY, CONFECTIONS; OTHER VALUABLE RECIPES FOR THE HOUSE-KEEPERS' NEEDS

THE ART OF COOKING

The section of the house which is most rarely seen by the visitor is the one which is most necessary to his comfort and that of the family. While the drawing-room, the library, the dining-room, and other apartments contribute their share to the enjoyment of life, the kitchen and its products are essential to existence itself. Whatever, therefore, it may be felt important to say about the arrangement and adornment of the rooms most in evidence in the well-ordered household, in all accounts of family life a large space needs to be devoted to the kitchen, that reservoir from which flows an endless succession of palatable viands, which have much to do with making life worth living. Of the time at our command a considerable portion is spent at the table; eating and drinking occupy a large place in our thoughts, and, while conscious that we must eat to live, we do our utmost to make the act of eating one of the chief enjoyments of life.

For this the art of the cook is all essential. Nature offers us a great variety of foods, and man has learned how to combine and develop these into hundreds of palatable dishes. They can be spoiled; nothing is more easy. They can be rendered unnutritious and distasteful by careless or ignorant handling. On the other hand, by the exercise of skill and care, they can be made nutritious, toothsome, often delightful to the palate, and the task of sustaining life can be converted into one of the leading pleasures of existence. How this may be done it is proposed to show in the following pages, by giving a collection of practical recipes for the preparation of food. In this it has been our purpose to combine economy with palatableness. Many of the recipes given in cook-books are so lavish in the use of butter, eggs, and other costly ingredients as to place them beyond the reach of ordinary families. This we have endeavored to avoid, and have also taken care to submit all our recipes to the inspection of experienced housewives, giving none which have not received the verdict of approval.

Man is omnivorous in appetite. He is at once a carnivorous and a herbivorous animal. A due combination of meats and vegetables forms the basis of our meals; followed, when appetite is stayed, with delicate and tasteful viands, in which all the art of the cook is enlisted to make them delicious. In ordinary dinner service it is customary to begin with soup, and follow with fish, meats or game, accompanied with vegetables, and proceed to a dessert of pies or puddings, cake, fruit, and other stays to the failing appetite. In arranging our recipes

we have followed in general this order, beginning with soups and proceeding through the solid courses to the dessert.

The Kitchen Fire.

To make a fire in a stove or range, take off the covers, brush out the ashes and knock all clinkers from the sides of the fire box. Open all the dampers. Bring shavings or paper, wood and coal. Cover the grate with shavings or loosely crumpled pieces of paper. Lay in crosswise small pieces of wood, and on top of these larger pieces, being careful to fill all the corners of the fire box. Leave spaces between for the passage of air, and light the fire from underneath.

When the wood begins to burn put on coal, pressing the wood down to the grate. Add more coal after the first supply kindles. As soon as the fire burns freely close the back damper, and when the oven is hot close the front damper. Never allow the coal to come above the edge of the fire box.

Every stove or range has, at least, two dampers; one to allow the air to pass up through the fire, another to allow the gas to escape up the chimney and to complete the circulation of air. When the oven is to be used, the dampers should be so regulated as to allow the heated air to pass around the oven.

In making a fire one thing should be borne strictly in mind. Never pour coal-oil on the kindling to make it burn more freely or on the fire to give it new life. If you have it in view to do this you had better take poison at once, and avoid the more painful suicide of burning to death, which has been the fate of so many who had the habit of using this dangerous material.

To keep the fire over night, close the front damper and leave the back one partly open; put on fresh coal and after it has kindled open the cooling doors to admit cold air over the fire.

The stove is blackened to make it look well, to prevent it from rusting and to keep in the heat. Moisten the blacking with warm or cold water, making a paste about as thick as cream. Rub this over the stove while it is cold and polish with a soft brush after the fire is kindled.

Soups and Their Preparation.

In making soup uncooked meat should always serve as the basic element. Cracked bones of cooked game or of rare beef and mutton may be added if desired, but the juices derived from raw meat can alone be depended upon for nourishment and flavor. The meat should be chopped fine, and then placed in cold water and allowed to soak for some time. If bones are used they should be thoroughly fractured. Heat should next be gradually applied and the water slowly brought to a boil. At no stage must it be allowed to boil fast. Salt has a tendency to harden the fibres and check the flow of the juices, and therefore should not be added till the meat is thoroughly done. While boiling, keep the pot covered. When done, strain through a cullender; and afterwards, for clear soup, through a hair sieve, or coarse bobbinet lace.

Let the tureen be kept covered until you are ready to serve the soup; then ladle it out quickly and neatly, having the soup-plates warmed in advance. In most cases soup is better on the second than on the first day; but it should not be warmed over too quickly, or left too long upon the fire after heating.

If the object be to obtain stock for soup, boiling must be kept up for some time, so as to obtain from the meat all its gelatine, so far as possible. The hardened albuminous matter which floats in the liquid can be removed by straining, so as to leave the soup clear. There will remain in the vessel a dry fibrous mass without taste and of little nutritive value.

Soup is often looked upon as a light kind of food—useful only as a preliminary to other foods; but in many countries it is the staple article of diet. There is no better way of economizing food. All the waste fragments of the table may be made available in this way. The French peasant has his "*pot-au-feu*" always ready to receive anything from which nutriment can be extracted, and makes his soup, with the addition of bread, his main sustenance.

Soups may be made alike from meats and vegetables, from shell-fish and game, and are capable of being very widely varied.

We give below recipes for preparing some of the more desirable kinds:

Beef Soup.—Select a shin of beef of five or six pounds' weight, crack the bone, thoroughly wash and place it in a kettle to boil, with five or six quarts of cold water. Let it boil very slowly for about six hours. In this way the stock is prepared, which may be set away for use the next day. Set it on an hour before dinner, add salt and pepper, and one carrot, two turnips, two tablespoonfuls of rice or pearl barley, one head of celery and a teaspoonful of summer savory powdered fine; the vegetables to be minced up in small pieces. After these ingredients have boiled a quarter of an hour, put in two potatoes cut up in small pieces; let it boil half an hour longer, take the meat from the soup, and, if intended to be served with it, take out the bones and lay it closely and neatly on a dish, and garnish with sprigs of parsley.

The seasoning of this soup is a matter of taste. Some use only salt and pepper, others put in a little mace and some small herbs. Serve very hot.

To make a simpler stock omit the spices and herbs, also the vegetables.

Veal Soup.—Put a three-pound knuckle of veal into three quarts of cold water, with salt and one small tablespoonful of uncooked rice. Boil slowly for three hours, or until the liquor is reduced to half its original quantity; remove from the fire. Into the tureen put the yolk of one egg, and stir in a teacupful of cream, or new milk; add a small piece of butter; on this strain the soup, boiling hot, stirring it all the time.

Chicken Cream Soup.—Take two young or one full-grown chicken. Cut it into pieces and put these into a soup kettle with half a pound of ham, and an onion; add four quarts of cold water. Bring slowly to a gentle boil, and keep this up until the liquid has diminished one-third, and the meat drops from the bones; then add half a cup of rice. Season with salt, pepper, and a bunch of chopped parsley.

Cook slowly until the rice is tender, then the meat should be taken out. Now, stir in two cups of rich milk thickened with a little flour. A chicken at least a year old is better for soup than a younger fowl.

Mutton or Lamb Broth.—Take four pounds of lean mutton or lamb, and cut into small pieces, which boil slowly in a gallon of water, in a covered vessel, for two hours. Soak a half teacupful of rice in enough warm water to cover it, and add to the boiling soup. Cook another hour, stirring from time to time, to keep the rice from settling to the bottom.

Beat an egg to a froth, and stir into it a cup of milk, into which has been rubbed a tablespoonful of flour. Mix with this a little of the hot liquid, until the egg is cooled sufficiently to prevent danger of curdling. Then, after taking out the meat, pour this into the pot, season with parsley, thyme, salt and pepper; let boil and serve.

This soup is nutritious and palatable for the sick with the rice left in. When strained it makes an excellent white table soup.

Mock Turtle or Calf's Head Soup.—Scald a well-cleaned calf's head, remove the brain, and boil the head until the meat will easily slip from the bone. Then take out the head; cut it in small, square pieces, and throw them into cold water; when cool, put it into a stewpan, and cover with some of the broth; boil until quite tender, set aside.

In another stewpan melt some butter, and in it put a quarter of a pound of lean ham, cut small, with herbs, also parsley and one onion; add about a pint of the broth; let it simmer for two hours, and then dredge in a small quantity of flour; add the remainder of the broth, and a glass and a half of Madeira or Sherry wine; let all stew quietly for ten minutes and rub it through a medium sieve; add the calf's head, season with a very little cayenne pepper and a little salt.

Having previously prepared force-meat balls, add them to the soup, and serve hot. Serve with sliced lemon, which may be laid on top of the soup, or passed separately.

Force-Meat Balls for Soup.—The force-meat balls, mentioned in the preceding recipe, may be thus made. Take one cupful of cooked veal or fowl meat, minced; mix with this a handful of fine bread-crumbs, and the yolks of four hard-boiled eggs

rubbed smooth together with a tablespoonful of milk; season with pepper and salt; add a half teaspoonful of flour, and finish with two beaten eggs; the hands must be well floured, and the mixture be made into little balls the size of a nutmeg; drop into the soup twenty minutes before serving.

Ox Tail Soup.—Boil two ox tails three to four hours, season with salt, black pepper and a small piece of ripe pepper pod. Add one-half cup barley, previously soaked in cold water three hours, a cup of tomato juice and a little carrot finely chopped. Boil all together one hour and serve hot.

Vermicelli Soup.—Take four pounds of lamb, removing all fat, one pound veal and a slice of ham, cut up, cover with a quart of cold water, and let it heat slowly. Keep it closely covered. After an hour, add four quarts of boiling water, and cook till the meat is in shreds. Then season with salt, herbs, and a little Worcestershire sauce, boiling for ten minutes in the soup. Then strain and set again on the fire. Now add about the third of a pound of vermicelli which has been boiled tender. Boil up once, and serve. Macaroni may be used if preferred to vermicelli.

Philadelphia Pepper Pot.—Put two pounds of tripe and four calves' feet into the soup pot and cover them with cold water; add a red pepper, and boil until the calves' feet have become very tender. Then take out the meat, skim and stir the liquid, and cut the tripe into small pieces, which put back into the liquid. If there is not enough of this add boiling water. Flavor with half a teaspoonful of sweet marjoram, sweet basil, and thyme, two sliced onions, sliced potatoes and salt. When these have boiled until almost tender, add a piece of butter rolled in flour, drop in some egg balls, boil fifteen minutes more. Serve hot.

Noodles for Soup.—Beat up one egg light, add a pinch of salt, and flour enough to make a *very stiff* dough; roll out like thin pie crust, and dredge with flour to keep from sticking. Let this dry for an hour or more; then roll it up into a tight scroll, and slice it into thin pieces. After all are cut, mix them lightly together, and, to prevent them sticking, keep them floured a little until you are ready to drop them into your soup. This should be done 15 minutes before serving, for if boiled *too long* they will go to pieces.

Fish Soup.—Select a large, fine fish, clean thoroughly, and put over the fire in water, allowing one quart for each pound of fish. Add an onion cut fine, and a bunch of sweet herbs. When the fish is cooked, and is quite tasteless, strain all through a cullender, return to the fire and add some butter; then salt and pepper to taste. A small tablespoonful of Worcestershire sauce may be added. Serve with small squares of fried bread and thin slices of lemon.

Oyster Soup.—Strain the juice from two quarts of oysters, add to it a teacupful of water, and heat slowly in a covered vessel. When near boiling, season with salt and pepper, add the oysters, and let them stew for about five minutes. Heat in a separate vessel a quart of milk with two tablespoonfuls of butter, pour in, and stir well for two minutes.

Be very careful that the soup is cooked just enough. Too much cooking ruins the oysters, while they are equally ruined for the taste by being underdone. The plumpness of the body and the ruffling of the edge are indications of their being in the right condition. Serve with sliced lemon and oyster or cream crackers. Mace and nutmeg may be used for seasoning.

Oyster Bouillon.—Wash and chop fifty good-sized oysters, put them in a double boiler, cover and cook slowly for an hour; add a pint of water, a level teaspoonful of celery seed, and strain through two thicknesses of cheesecloth; reheat, add a level tablespoonful of butter, a little salt, and serve in cups.

Clam Soup.—Take twenty-five clams, and chop fine. Put over the fire the liquor that was drained from them, pour in a cup of water, and let boil ten minutes; then add the chopped clams, and boil half an hour. Season to taste with pepper and salt and two tablespoonfuls of butter; let it boil again and add one quart of milk heated to scalding, stir in a tablespoonful of flour made

to a cream with a little cold milk, or two crackers rolled fine. Some like a little mace and lemon juice in the seasoning. Serve without delay.

Green Turtle Soup.—Chop the coarser meat of the turtle, with the bones, add four quarts of water, with salt, pepper, two onions, and a bunch of sweet herbs. Stew slowly for four hours, keeping it at a boil. Then strain the soup, and add the finer meat and the green fat of the turtle, which have been simmering for an hour in a quart of water. Thicken with brown flour and boil for an hour more. If there are turtle eggs, boil them separately for four hours, then throw into the soup. Use force-meat balls if there are no eggs. Then put in the juice of one lemon and a glass of Madeira wine. Beat up once and pour out. Any private family can now obtain green turtle meat for soup, it being preserved in air-tight cans.

Chicken Soup.—Prepare a fowl for cooking. Separate it at the joints and cut it into small pieces. Put the meat into a saucepan with three pints of water and cook it slowly from 2½ to 3 hours, or until very tender. Then take out the meat, let the liquor continue to boil, and to it add two tablespoonfuls of rice, two tablespoonfuls of finely cut onion, which has been fried in a little butter until soft, but not brown, and three peppercorns. Remove the gristle from the meat and put the meat, with one teaspoonful of salt, into the soup, and simmer until the rice is very soft. A little white pepper and celery salt may be added, if desired. If the water boils away during the cooking, add more boiling water. Serve the soup with croutons.

Croutons.—Cut slices of stale bread ½ inch thick. Cut off the crusts and divide the slices into ½ inch cubes. Place them on a tin sheet and bake them until golden-brown. Serve with stews and soups.

Vegetable Soup.—Scrape one small carrot and pare one small turnip, removing a thick skin. Grate and add them to one cup of soup stock and let it simmer 45 minutes. Pare one potato, cut it into small cubes and add it to the stock after the turnip and carrot have cooked 15 minutes. Add some tomato, if desired. The soup may be varied by using rice or noodles with the stock, instead of vegetables.

Thick Vegetable Soup.—Put 1 lb. shin bone into one pint cold water with one-half teaspoonful each of salt and sugar, let it simmer. Brown two sliced onions in one tablespoonful of butter, stir in an equal quantity of flour and brown it; add one cup boiling water gradually, and, when the mixture is smooth and thick, stir it into the soup. Cut two carrots and two turnips in small squares, and some celery in ½ inch strips, and add them. Simmer two hours. Three-quarters of an hour before serving slice two potatoes, parboil 5 minutes, and add them and one-half teaspoonful of pepper. One tablespoonful of chopped parsley may be added just before serving. Remove the bone, separate the meat, if there is any, into small pieces, and serve in the soup. Do not put any fat meat into the soup.

Green Pea Soup.—Put the empty pods of a half peck of peas into a gallon of water, and boil for an hour. Then strain, put in four pounds of chopped beef, and boil slowly an hour and a half. Then add the peas; boil half an hour, adding ten minutes before serving a half cup of rice flour, salt, pepper, and chopped parsley. Strain into a hot tureen.

Dried Pea Soup.—One gallon of water, one quart of soaked peas; boil slowly for two hours. Then press the peas through a cullender with a wooden spoon, and return to the pot, adding a small head of celery, chopped, and a little parsley or summer savory. If the soup becomes too thick add more water. Place in the bottom of the tureen small pieces of toasted bread, or scatter bread that has been fried in butter until brown on the surface of the soup, after it has been poured into the tureen.

Pea Porridge.—Shell the peas and put the pods on to boil, cooking about an hour. Drain off the water, and put it over the fire; add the peas, some potato cut in small pieces, a bunch of pot-herbs, and a small onion. When these are well cooked add a quart of milk, and thicken with flour and butter rubbed together, and salt and pepper

to taste. Small dumplings are an addition, if liked.

Bean Soup.—Cook three pints soup or marrowfat beans, with one and one-half pounds of fresh pork. When done remove the meat. Take out a dish of beans to serve for dinner. Take a pint of beans and run them through a sieve. Have as much water as necessary, for the amount of soup desired to make, add the pulp and a tablespoonful of butter, make thickening of one tablespoonful of flour and one-half cup sweet milk, one well-beaten egg, and one onion cut fine.

Black Bean Soup.—Take one cup black beans, soak several hours or over night; put to boil in one quart cold water. Slice half a small onion, and fry it in a tablespoonful of butter. Add it to the beans, and simmer four or five hours, or until the beans are soft, adding cold water so as to keep the quantity one quart. Cook together one tablespoonful each flour and butter, and add to the soup after it is strained. Season with a tablespoonful salt and a sprinkle of pepper and mustard. Any other dried beans may be used in making this soup.

Corn Soup.—Stew one-half can or two cups corn with one-half cup water until soft. Scald one pint milk, with salt and pepper added, in the top of a double boiler; add one-half tablespoonful of sugar. Pour in the corn, and strain it if desired.

Chicken Corn Soup.—Take a large chicken, cut into pieces, and boil with the cobs of the corn in a gallon of water till tender. Then put into the pot the green corn cut from a dozen ears, and stew gently for an hour longer. Remove the chicken and the cobs, season the soup with pepper, salt, and parsley, thicken with rice or wheat flour, boil up again, and serve. There is no need to strain if the corn is young.

The chicken, unless boiled to rags, may be served in a fricasee. For this, beat up an egg and a tablespoonful of butter, adding some liquor from the soup, and boil for a moment. Thicken with flour, season, and pour hot over the chicken. Garnish dish with parsley and slices of hard-boiled egg.

Graham Soup.—Chop up finely three onions, three carrots, four turnips, and a bunch of celery. Put on the fire in about three quarts of water. Simmer half an hour, then add a small cabbage, which has been parboiled and cut up. In fifteen minutes more put in a pint of stewed tomatoes and a bunch of sweet herbs, and boil briskly for twenty minutes. Then rub through a cullender, and boil again, adding pepper and salt and a tablespoonful of butter. Some cream, thickened with corn starch, may be added, if convenient. Give it a brief boil, and it is ready to serve.

Tomato Soup.—Stew a quart of peeled tomatoes until soft, strain, and add a pinch of soda. Set over the fire again, adding a quart of hot milk; season with salt and pepper, a piece of butter the size of an egg, and three tablespoonfuls of rolled cracker, and serve hot. Canned tomatoes may be used in place of fresh ones.

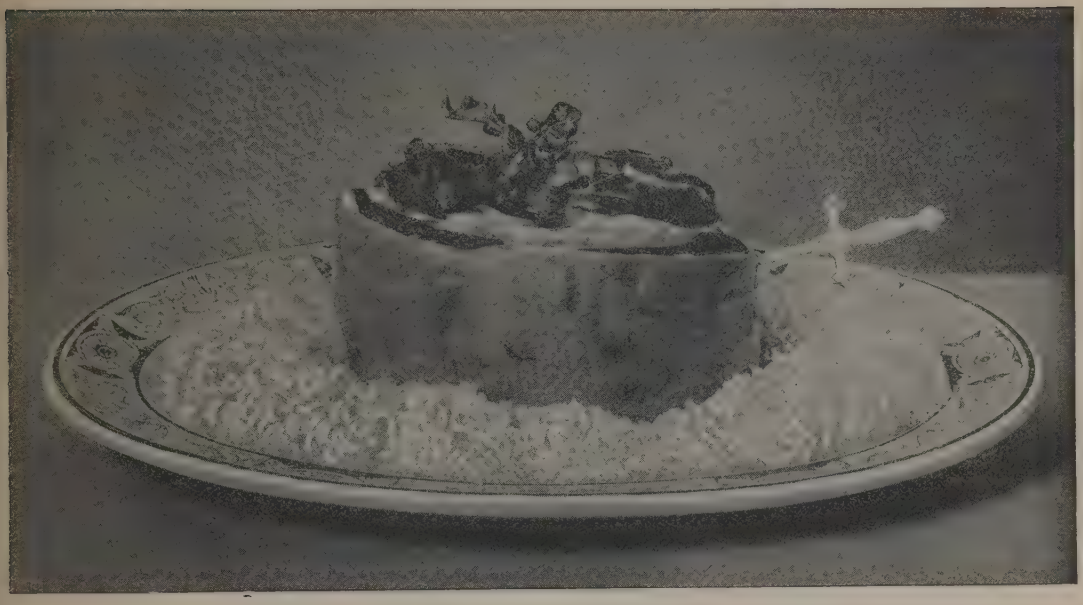
Potato Soup.—Three potatoes, one and one-half cups water, three cups milk, one onion, three teaspoonfuls salt, one and one-half tablespoonfuls flour, one and one-half tablespoonfuls butter. Boil potatoes until soft, drain and mash them. Cook the onions in the milk; add this to the mashed potatoes, add the salt and pepper. Melt the butter in a pan, add flour, add this to the soup, let boil up once, strain and serve hot.

Cream of Tomato or Mock Bisque Soup.—Stew one can tomatoes until soft, strain, and add one-half teaspoonful soda. Melt three tablespoonfuls butter in a saucepan, and stir in two tablespoonfuls flour. Cook it, stirring until the flour swells and is smooth. Pour in one quart scalded milk gradually and cook, stirring constantly, until the mixture thickens; add one teaspoonful salt and one-eighth teaspoonful pepper. Add the tomato, and serve immediately in a hot covered dish. If the soup curdles, beat it with an egg-beater until smooth.

Fish.

The variety of edible fish is very considerable, most of them being wholesome and nutritious. Yet white-fleshed and red-fleshed fish, oily fish, shell-fish, etc., differ widely in their properties. In general, fish contain less fat than ordinary meat, while

Rolled Rib Roast with Riced Potatoes



PRACTICAL DIRECTIONS

Remove the bones from a rib roast and skewer the meat into a round shape; dredge with flour and set on a rack in dripping pan, into a hot oven. When the outside of the meat is seared over, add a little drippings melted in hot water; reduce the temperature of the oven and bake, (weight from six to eight pounds) from sixty to ninety minutes. Baste often with the drippings in the pan and dredge with flour after each basting; add salt to the flour when half cooked. When cooled substitute silver skewers for those used in the oven. Garnish with a stem of watercress and surround with *Riced Potatoes*. Pass through a ricer about eight hot boiled potatoes; add three tablespoonfuls of butter, half a teaspoonful of salt, and about half a cup of hot milk or cream, beat thoroughly with perforated cake spoon, and pass through the ricer, or vegetable press, around the meat.

often much richer in nitrogenous tissue. The suitability of fish for the table varies with the season, its food supply, the length of time it has been taken out of the water, and the treatment it has received. It is in the highest condition just before the spawning time, being then fatter and of richer flavor. Herring, mackerel, and many other fish are best immediately after being caught, while the ray and some similar fish improve by keeping for several hours.

As a rule, white fish are more digestible than red fish, and the less oily than the very oily. Among those best suited for weak stomachs are fresh-water fish, such as shad, whiting, etc. Salmon, while the most esteemed of table fishes, has an evil reputation with dyspeptics—this being probably due less to the fish itself than to its condition when cooked and its accompaniments.

Fish of all kinds should be eaten as fresh as possible, and should be kept near the ice until cooked. A fish in good condition should have firm flesh, bright-red gills, and full, clear eyes, with little odor about it. Before cooking it should be thoroughly cleaned and wiped with a cloth wet with salt water. For frying and broiling purposes oily fish, such as shad, mackerel, herring, salmon, and bluefish, are the best, as they do not become dry.

Fried Fish.—Most of the smaller fish are eaten fried. They are generally termed pan-fish. Clean well, cut off the head, and, if the fish is large, cut out the backbone, and slice the body crosswise. Season with salt and pepper. Dip in Indian meal, or wheat flour, or use beaten egg and roll in bread or fine cracker crumbs (trout and perch should not be dipped in meal). Cook in a thick bottomed iron frying-pan, laying the flesh side down, and using hot lard or drippings. Fry slowly, turning when lightly browned.

Steamed Fish.—Bend the body of the fish in a circle, pour over it half a pint of vinegar, season with pepper and salt, and let it stand an hour in a cool place. Then pour off the vinegar, and put the fish into a steamer over boiling water, and steam twenty minutes, or longer for large fish. When the meat easily separates from the bone it is done. Drain well, and serve on a napkin placed on the platter, decorating with sprigs of curled parsley.

Broiled Shad.—Split and wash the shad, and dry it in a cloth. Season with salt and pepper. Grease the gridiron well, heat it, and lay the shad upon it, the flesh side down. Cover with a dripping-pan and broil for about a quarter of an hour, or more, according to the thickness. The fire must be clear and hot. Butter well, and send to the table. Covering the fish while broiling gives it a better flavor.

Broiled Salmon.—Cut into slices an inch thick, and season with pepper and salt. Having buttered a sheet of white paper, lay each slice on a separate piece, and envelope them by twisting the ends. Broil gently over a clear fire, and serve with anchovy or caper sauce. When higher seasoning is required, add a few chopped herbs and a little spice.

Boiled Fresh Codfish.—Before cooking, soak in slightly salted water for half an hour. Then wipe dry, and wrap in a linen cloth, dredged with flour, and sew up the edges. Put into the kettle, with plenty of hot water, and boil briskly, allowing fifteen minutes for each pound. The fish is sufficiently cooked when the flesh separates from the bone.

The sauce is prepared by stirring into two gills of boiling water and milk two tablespoonfuls of butter, rolled in flour, and adding, as it thickens, two beaten eggs. Season with salt and parsley, and, on withdrawing from the fire, add pickled nasturtium or celery seeds. Put the fish in a hot dish and pour the sauce over it. Garnish with parsley and circles of hard boiled eggs.

Rock fish and bass may be cooked in the same manner, but will need less boiling.

Shad Roe.—Drop into boiling water and cook for twenty minutes. Take from fire. Butter a tin plate and lay the roe on it; dredge with salt and pepper and spread with butter, then dredge with flour; cook in oven for half an hour. Baste frequently with salt, pepper, butter, flour and water.

Salt Codfish Balls.—Soak shredded codfish in cold water about ten minutes and drain. Add an equal amount of mashed

potatoes, a small piece of butter and one egg well beaten. Mix thoroughly and shape into balls or cakes, first flouring your hands. Fry in smoking hot fat.

Fishballs, oysters, and croquettes should be fried in a bath of smoking hot fat. Melt the fat (olive oil, lard, cottolene, or beef dripping) in a deep pot, and when it begins to smoke, drop in a small cube of bread. If in forty seconds the bread browns, the fat is hot enough for frying cooked foods, such as fishballs and croquettes, or foods which need little cooking, such as oysters. All fried foods should be drained on soft brown paper. Care should be taken not to cook too much food at one time, because the cold food lowers the temperature of the fat and thus makes the food greasy. The fat may be strained and used many times.

Codfish Balls.—To make these, prepare the fish as for boiling. Cut into pieces and boil twenty minutes. Pour off the water, cover again with boiling water, and boil twenty minutes more. Then drain and lay out to cool. When cold, pick to pieces with a fork, leaving only the flesh, and shredding it fine. Add an equal bulk of mashed potatoes, and work into a stiff batter with the aid of butter and sweet milk. Make the mixture into balls or cakes, first flouring your hands. Fry in smoking-hot lard to a light brown. Or use the cod and potatoes alone, molding into the shape of biscuits.

Baked Shad.—In the opinion of many people, the best way to cook a shad is to bake it. For this, fill it with bread-crumbs, salt, pepper, butter, and parsley, and mix this up with the beaten yolks of eggs. Then sew it up or fasten a string around it. Pour over the fish a little water and some butter, and bake as you would a fowl. An hour or more will be needed to bake. Garnish with slices of lemon, water cresses, etc.

Boil up the gravy in which the shad was baked, put in a teaspoonful each of catsup and brown flour, the juice of a lemon, and a glass of sherry or Madeira wine. Pour on the shad as a dressing. Serve in a sauce-boat or suitable dish.

Baked Whitefish.—Clean the fish and cut off the head, if preferred; cut out the backbone to within two inches of the tail, and stuff the fish with the following mixture: Soak stale bread in water; fry in butter a large onion, and chop fine; add the bread, squeezed dry, two ounces of butter, and salt, pepper, and a little parsley or sage; heat through, take off the fire, and add the yolks of two well-beaten eggs. Sew the fish, when filled, with fine twine, and wrap with several coils of white tape. Rub it over slightly with butter, cover the bottom of a baking pan with hot water, and place the fish in it, back upward. Serve with the following dressing: Reduce the yolks of two hard-boiled eggs to a smooth paste with two tablespoonfuls good salad oil; stir in half a teaspoonful English mustard, and add pepper and vinegar to taste.

Baked Salmon.—Clean, wipe dry, and rub with salt and pepper. Then lay the fish on a grating over your baking-pan, and roast or bake, basting at first with butter, and afterwards with its own drippings. If browning too fast, cover with a sheet of white paper until the whole is cooked. Then put in a hot covered dish, and add to the gravy a little hot water thickened with flour, a large spoonful of strained tomato sauce, and the juice of a lemon. Let this boil up, and serve in a sauce-boat. If you prefer, you can serve with cream sauce.

Stewed Catfish.—Skin, clean, and cut off the heads. Sprinkle with salt, and lay in a cool place. Then cover with cold water in a saucepan, and stew gently for thirty or forty minutes, according to size. Add a small onion, chopped, some dropped parsley, pepper, and a paste made of flour and butter. Boil up, take out the fish, and lay in a deep dish, pouring the gravy over the fish. Serve in a covered dish.

Fried Catfish.—Prepare as above. Beat two or three eggs, in which dip the fish, and then dip into powdered cracker. Fry quickly in hot lard or dripping. Serve as soon as done.

Boiled Salmon Trout.—Clean, wash, and dry the fish. Wrap in a thin cloth, cover with salted water, and boil gently for half an hour, or longer for large fish. When done, remove the cloth and lay in a

hot dish. Pour over it cream sauce and serve. The cream sauce is made of a cup of cream, diluted with a few spoonfuls of hot water, stirring in two tablespoonfuls melted butter and some chopped parsley.

Fried Trout.—Brook trout are usually served fried. After cleaning and drying, roll in flour, and fry in butter, or butter and lard. Let the fat be hot, fry to a delicate brown, and serve instantly. Use no seasoning except salt. Lay on a hot napkin, to absorb any external grease, and range side by side in a heated dish.

Canned Salmon.—Canned salmon may be served cold with any of the fish sauces. For a breakfast dish it may be heated, seasoned with salt and pepper and served on buttered toast, with a dressing of milk thickened with butter and flour poured over it.

Breakfast Mackerel.—Soak the fish over night, next morning put in a skillet in cold water. Let come to a boil and pour off water, add more and let come to a scald; take up, spread over with butter, dredge with flour and set in oven to brown.

Terrapin.—Cut off head and dress. Boil till tender with a little salt and a pinch of soda added to the water. When tender take from water and pick to pieces, add a few cracker crumbs, one onion, parsley, allspice, salt and pepper, add two tablespoonfuls of butter. Boil liquor down, pour over fish; garnish with slices of lemon and bake a light brown.

Mock Terrapin.—Take half a calf's liver, season and fry brown. Hash it not very fine; dredge thickly with flour; take one teaspoonful of mixed mustard, a pinch of cayenne pepper, two hard-boiled eggs chopped fine, a piece of butter size of an egg, one teacup of water. Boil together a minute or two and serve.

Turtle.—Cut off the head, and scald, scrape and clean thoroughly. Put on to boil, shell and all, add salt and pepper, and cook until very tender, pick meat from shell, season with butter, and thicken with a tablespoonful of flour and a little milk.

Fried Eels.—After cleaning the eels well, cut in pieces about two inches long, wash them and wipe them dry, roll them in flour or crackers, fry in hot lard. They should be browned all over and thoroughly done.

Fish Chowder.—Take 1 lb. cod or haddock; put the head, bones, fins and skin into one cup cold water and let simmer. In one tablespoonful of dripping brown one small onion. Pare and slice two potatoes and parboil five minutes. Strain the fish bones from the water, add the potatoes, scrape in the browned onion, and add salt and pepper. Bring to a boil, then add the fish, cut into inch pieces; simmer from ten to twenty minutes, or until the fish and potatoes are done. Take two tablespoonfuls each of flour and butter and one cup of milk, and cook together to make a white sauce; add it to the chowder, boil, and add two crackers broken into quarters. Serve in a hot dish.

Fish Sauce.—Put four tablespoonfuls butter into a saucepan, and cook in it the same measure of flour. Add two cups boiling water, milk or fish-stock, four tablespoonfuls of butter, and season with salt and pepper. Boil five minutes and serve. This is often called drawn-butter sauce. To make egg sauce add to above two or three chopped hard-boiled eggs.

Shell Fish.

Of shell-fish the oyster is the general favorite among epicures and everyday people alike. It is more wholesome eaten raw than when cooked, the flesh being coagulated and hardened by cooking. The least digestible part is the firm hard section of muscle, by which the animal was fastened to the shell. Persons of weak digestion should reject this portion. The clam, while it may be made into various palatable dishes, is much tougher and less digestible than the oyster. As regards the crab and lobster, they are favorite epicurean dishes, but not from their digestibility, since they are unfitted for weak stomachs. Many persons of fairly good powers of digestion find the crab or lobster a heavy load upon the stomach.

Fried Oysters.—Remove all bits of shell from oysters, lay them on a clean cloth, and pat them gently to dry them. Shake salt and pepper over them. Beat an egg, and stir

into it one tablespoonful cold water or milk. Sprinkle some fine crumbs with salt and pepper. Dip the oysters in the crumbs, then in the beaten egg, and again in the crumbs, covering them over each time. Fry them in deep, hot fat, drain on brown paper, and serve on a hot dish.

Fried Oysters.—Take large oysters from their own liquor, and dry them in a thickly folded napkin. Then heat an ounce each of butter and lard in a thick-bottomed frying-pan. Season the oysters with pepper and salt, and dip each into egg and cracker-crumbs rolled fine, until it will take up no more. Place them in the hot grease and fry to a delicate brown, turning them with a broad-bladed knife. Serve crisp and hot. Some roll oysters in corn-meal or flour, but they are much more crisp [illegible]th egg and cracker-crumbs.

Small Oyster Pies.—Take a tin plate half the size of an ordinary dinner plate; butter it, and cover the bottom with a puff paste, as for pies. Lay on it five or six select oysters, or enough to cover the bottom; butter, and season with a little salt and plenty of pepper; spread over this an egg batter, and cover with an upper crust of the paste, piercing it with a fork. Bake in a hot oven fifteen to twenty minutes, or until the top is nicely browned. Repeat this process for each pie.

Stewed Oysters.—Drain the liquor from two quarts of oysters, mix it with a teacupful of hot water, season with salt and pepper, and boil in a saucepan. After it has come to a boil put in the oysters, and cook not over five minutes. Add two tablespoonfuls of butter, and when this is melted a cupful of boiling milk. Then take from the fire, and serve with oyster or cream crackers.

Broiled Oysters.—Let these be large and plump. Wipe dry, sprinkle with salt and red pepper, and broil on a small gridiron made for this purpose. Butter the gridiron well, and have a clear, hot fire. Broil quickly, and serve hot, with a small bit of butter on each oyster.

Brown sauce for broiled oysters may be prepared as follows: Heat a cup of oyster juice; stir two tablespoonfuls butter in a pan over the fire till it is a delicate brown; add four tablespoonfuls flour, and when well mixed add the oyster juice slowly, and then a cup of hot milk or cream. Season with salt and pepper, and keep over a pan of hot water till needed. A few cloves or a stick of mace may be used to flavor the sauce.

Scalloped Oysters.—Crush several handfuls of crackers, and put a layer in the bottom of a buttered dish, wetting it with a mixture of the oyster juice and milk. Then place a layer of oysters, seasoned with salt and pepper, another layer of moistened cracker dust, and so on till the dish is full, the upper layer being a thick one of crumbs. Stick bits of butter thickly over it, cover the dish, and bake half an hour in the oven. If not brown on top, remove the cover, and set the dish on the upper grating of the oven.

Panned Oysters.—Put the oysters into a saucepan without water, and shake them over a moderate fire until they look plump and their edges are curled. For twenty-five oysters add two tablespoonfuls butter, salt and pepper, stirring the seasoning in well. Serve in a hot dish; if desired, on slices of toast.

Creamed Oysters.—Cook as for panned oysters; drain in a strainer; make a cup of white sauce, and stir the oysters into the hot sauce. Serve on toast; or sprinkle with bread crumbs, browned in butter. For the white sauce, see *Fish Chowder*.

Creamed Clams.—Have twenty-five clams chopped fine. Put in a chafing dish two tablespoonfuls butter; when melted add two tablespoonfuls flour. Add the clams with half a pint of their juice; season well with pepper and salt. Let them simmer from ten to fifteen minutes. Just before serving add a gill of sweet cream, and let come to a boil. Serve hot.

Steamed Oysters.—Drain one quart of select oysters, put in pan and place in steamer over boiling water, cover and steam until oysters are plump with edges ruffled; place in buttered dish with butter, pepper and salt and serve.

Oyster Fritters.—To a cupful of oyster juice add one cupful milk, three eggs, a

little salt, and flour to make a thin batter. Chop the oysters and stir into batter. Place in the pan a few spoonfuls of lard, heat very hot, and drop in the batter by the tablespoonful. Take from the pan as soon as done to a yellow brown and serve very hot. Some put one whole oyster to each fritter; in this case a thicker batter is needed.

Oyster Sauce.—Boil twenty-five oysters in their own juice for one minute, stirring steadily. Drain, put back the liquor on the fire; add one cup milk, rub a tablespoonful of butter and two of flour to a smooth paste, and stir in the hot liquid till it thickens. Chop the oysters small, add them to the sauce, season with salt and pepper, and take from the fire. Serve with poultry and boiled fish.

Clam Fritters.—Take fifty small or twenty-five large clams, cut each in two if large. Lay them on a thickly folded napkin, and put a pint of wheat flour into a basin, adding three well-beaten eggs, and half a pint or more of clam juice. Beat the batter until it is smooth and perfectly free from lumps, then stir in the clams. Put plenty of lard into a thick-bottomed frying-pan, let it become boiling hot, and put in the batter by the spoonful. Fry gently, and when one side is a delicate brown, turn the other.

Clam Chowder.—For this take fifty clams, a bowl of salt pork, cut up fine, and one of onions, finely chopped, with the same or a greater quantity of potatoes cut into small pieces. Fry the pork very gently, and when brown take it out and put in the onions to fry. This should be done in a frying-pan, and the chowder-kettle be made very clean before they are put in it, or the chowder will burn. Sprinkle some of the pork in the bottom of the pot, place on it a layer of clams, seasoned with salt and pepper and covered with bits of butter. Next have a layer of onion and one of small crackers moistened with milk. On this pour some of the fat from the frying-pan, and then repeat the process, continuing till the pot is nearly full. Cover now with water and stew slowly, for forty-five minutes. Drain off the liquor that flows freely, and, after emptying the chowder from the pot, return this liquor. Thicken it with flour or cracker dust, add some wine and catsup, boil, and pour over the contents of the tureen.

Devilled Crabs.—Extract the meat from boiled crabs and mince it finely. Season well with mustard, cayenne, salt, and some sharp sauce. Toss and stir till well mixed, and cook in a covered saucepan, with just enough water to keep the meat from burning. For dressing, use pulverized cracker, moistened with a tablespoonful of cream, and with vinegar until thin. After the water has come to a boil stir this in. Next stir in a tablespoonful of butter, boil again, and take from the fire. Serve in the shell of the crab, if desired.

Lobster Croquettes.—Add pepper, salt, and powdered mace to the meat of a boiled lobster, chopped fine. Mix with this a quarter of its quantity of bread crumbs, and mold into pointed balls, with the aid of two tablespoonfuls of melted butter. Roll in beaten egg, then in cracker dust, and fry in butter or sweet lard. Serve dry and hot.

Lobster Salad.—Extract all the meat from a cold boiled lobster, and mince it, except the coral, which is reserved for the dressing. For this take four hard boiled eggs, and rub the yolks to a smooth paste in a bowl or mortar, gradually rubbing in two tablespoonfuls salad oil, and one teaspoonful each of mustard, salt, white sugar, cayenne pepper, and Harvey's or other sauce. Lastly add the coral, which must be worked well upon a plate with a spatula. Moisten with vinegar as the ingredients stiffen, adding until the mixture is thin enough to pour over the minced lobster. Toss with a silver fork, taking care not to break the meat. Chopped lettuce may be mixed with the salad. Garnish the dish around its edges with curled lettuce, or rings cut from the white of the boiled eggs. Lobster salad should be eaten soon. It becomes unwholesome if it stand long.

Broiled and Baked Lobsters.—Lobsters which are to be broiled or baked are killed by cutting them into halves; the stomach and long intestine are then re-

moved, the lobster basted with melted butter, dusted slightly with salt and pepper, and, if baked, placed in a very hot oven for half an hour, basting frequently. If broiled, arrange in a broiler, sear quickly the flesh side, and broil, shell side down, at an elevation of six inches over a perfectly clear coal fire for about 30 minutes, or, if underneath a gas stove, with the flesh side up, basting four or five times while broiling. Serve immediately with melted butter sauce.

Scallops Fricasseed or Fried.—Of scallops only the muscular part is used. Fricasseed they form one of the nicest of luncheon dishes. Wash them thoroughly in cold water, drain, and pour over sufficient boiling water to cover; bring them to the boiling point and drain again. To each pint allow two tablespoonfuls of butter, two tablespoonfuls of flour, half a pint of milk and the yolks of four eggs. Put the butter and flour into a saucepan; when mixed add the milk and stir until boiling; add the scallops, a teaspoonful of salt, a dash of pepper, just a grating of nutmeg, and when hot add the yolks slightly beaten, a tablespoonful of chopped parsley, and serve at once. Scallops may also be dipped in egg and breadcrumbs, fried in smoking-hot fat and served with tomato ketchup or sauce.

Poultry and Game Birds.

The term poultry includes chickens, turkeys, ducks, and geese. Its flesh is lighter in color than that of other animals, but it is very nourishing. The flesh of ducks, geese, and many wild birds is much darker than that of the chicken or turkey. The flesh of birds is never mottled, like that of mammals; that is, it does not contain fat in layers between the musuclar tissue, though there may be much fat in other parts of the body. The flavor and digestibility of the flesh of birds differ considerably, and the flavor is much affected by the food. The white meat of birds is generally considered the most tender, and the dark meat the most savory and stimulating.

Roast Turkey.—Be careful to choose a young turkey. Remove the feathers carefully, and singe over a burning newspaper on the top of the stove; then carefully "draw" the fowl, being heedful not to break any of the internal organs. Remove the crop, cut off the head, and tie the neck close to the body by drawing the skin over it. This done, the inside of the turkey must be carefully rinsed out with several waters, a teaspoonful of baking soda being mixed in the next to the last. The inside of a fowl is often sour, if it has not been freshly killed, and soda acts as a corrective to this. Next wipe the turkey dry, inside and out, with a clean cloth, rub the inside with some salt, and fill with the dressing described below. Then sew up the body with a strong thread, tie the legs and wings to the body, rub with a little soft butter, sprinkle with salt and pepper, and dredge with a little flour. Now place the turkey in a dripping pan, pour in a cup of boiling water, and set it in the oven. Baste often, turning the bird around occasionally so that every part will be uniformly done. If the liquid runs out clear when the body is pierced, the bird is done. If any part is likely to scorch, pin over it a piece of buttered white paper. A fifteen-pound turkey requires between three and four hours to bake. Serve with cranberry sauce.

Turkey or Chicken Dressing.—Crumble one loaf of bread fine, soften with melted butter, cover closely, let stand from half to one hour, then add salt, pepper and a little sage and onions, mix thoroughly.

Chestnut Dressing for Turkey.—For a ten-pound turkey, one quart of Spanish or two quarts of common chestnuts will be required. Shell, blanch and boil them until tender; drain, mash or chop fine; add a tablespoonful of butter, a teaspoonful of salt and a saltspoonful of pepper. Mix and stuff into the turkey.

Roast Turkey with Oysters.—Clean a turkey and lay it in a dripping pan; prepare a dressing of stale bread, composed of one quart of bread crumbs and one cupful of butter, and water enough to moisten. Add to this two dozen oysters and pepper and salt to taste. Mix all, and stuff the turkey with it; and put butter over the outside; put some water in the dripping pan, set it in the oven and bake until done, basting quite often. Never parboil a young turkey.

Gravy for Turkey.—When the turkey is put in to roast, place the neck, heart, liver and gizzard in a stew-pan with a pint of water, and boil until they become quite tender. Then, chop the heart and gizzard, mash the liver, and throw away the neck. Return the chopped meat to the liquor in which it was stewed. When the turkey is done this material should be added to the gravy that dripped during the roasting, the fat being first skimmed from the surface of the dripping-pan. Set it then over the fire, boil three minutes and thicken with flour. Brown flour will not be needed to color the gravy. The garnishes for turkey or chicken are fried oysters, thin slices of ham, slices of lemon, fried sausages, or force-meat balls. Parsley is also used.

Fried Chicken or Beef Gravy.—Add one tablespoonful of flour to the fryings after the meat has been taken up; stir rapidly, and do not allow it to scorch; add one pint sweet milk, salt and pepper to taste; let boil until thick.

Roast Chicken.—Pick and draw your chicken, wash in two or three waters, and add a little soda to the last but one if there is any doubtful odor. Fill the bodies and crops with a filling of bread crumbs, butter, pepper, salt, etc., as described for roast turkey; sew them up, and roast an hour or more, according to size, Baste at first with butter and water, and afterwards with the gravy from the pan. A little hot water should be put in the pan to prevent burning.

Stew the neck and giblets in a little water, and, after removing the chickens from the pan, pour this into the drippings; boil up once; add the giblets, chopped fine; thicken with browned flour, and serve in a gravy boat. The chickens may be served with tomato sauce or crab-apple jelly.

Roast Goose.—The goose should be absolutely young; fill with dressing made of two pints bread crumbs, one onion chopped fine, three tablespoonfuls butter, one egg, slice of pork chopped fine; salt and pepper. Put in roaster, and sprinkle with salt, pepper and flour; put one quart of boiling water in roaster and cook from three to four hours. Boil the giblets tender; chop for the gravy; thicken gravy with a little flour and milk. Serve goose with apple sauce.

Fricasseed Chicken.—For this the fowls need not be as tender as for roasting. Clean, wash, and cut up, and place for half an hour in salt water. Then put into a pot, with half a pound of salt pork, and cover with cold water. Cover the pot, let them heat very slowly, and then stew for over an hour, or much longer if the chickens are tough. Take care to cook very slowly; rapid boiling toughens them. When tender add a small onion or two, some parsley and pepper. Cover again, bring to a boil, and stir in a cupful of milk, to which are added two beaten eggs and two tablespoonfuls of flour. Boil up, and add a large spoonful of butter. Place the chicken in a deep dish, pour the gravy over it, and serve. In all cases where beaten egg is added to a hot liquid, it is best first to drop a little into the egg, beating while doing so, to heat it gradually, and prevent it curdling, as it will if thrown suddenly into hot liquor.

Broiled Chicken.—Be sure that your chicken is young. If in doubt as to this, it is best to make it tender by steaming. Place sticks across a dripping pan full of boiling water, lay the chicken upon these, cover with a tin pan, set in the oven, and let it steam for half an hour. (The chicken should first be split down the back and wiped perfectly dry). Then transfer to a buttered gridiron, inside downward, cover, and broil till brown and tender, turning several times. Put into a hot dish, butter well, and serve smoking hot.

Broiled Chicken on Toast.—Broil in the usual way, and when the fowl is thoroughly done take it up in a square pan, butter it well, season with pepper and salt, and set it in the oven for a few minutes. Then put slices of moistened buttered toast on a platter; lay the chicken upon it; add to the pan gravy part of a cupful of cream or milk thickened with a little flour; pour over the chicken, and serve.

Stewed Duck.—Prepare the fowls by cutting them up, in the same way as chicken for fricassee. Lay some very thin slices of salt pork upon the bottom of a stew-pan,

and place the pieces of duck upon the pork. Stew slowly for an hour, closely covered. Then season with salt and pepper, and add half a teaspoonful of powdered sage, or minced green sage, and one chopped onion. Stew another half hour, or until the duck is tender. Stir a large tablespoonful of brown flour in a little water and add it to the stew. Let it boil up, and serve all together in one dish, accompanied by green peas.

Chicken Croquettes.—Take the cold chicken, chop very fine, use about one-third as much cracker crumbs (not too fine) as you have meat. Season with salt and pepper; add one egg beaten, and cold gravy; make into rolls or round cakes, dip into batter, fry in very hot drippings, one-half butter and one-half lard.

Chicken Hash.—Remove the meat from the bones of cold stewed chicken, cut into small pieces, putting these in the gravy. Set on the fire with milk enough to cover; add butter, pepper, and salt; thicken with flour. When done, serve on hot buttered toast.

Chicken Stew.—Cook the fowl in the same manner as for fricassee. When the meat is tender remove it from the water and serve with a sauce prepared with the liquid in which the meat was boiled. To one pint of liquid allow the following ingredients: One tablespoonful butter, two of flour, and one of parsley, if desired; one-half teaspoonful of salt and one-quarter of pepper.

Chicken Pie.—Boil chicken until tender (one year old is best), peel half dozen potatoes while it is stewing. To make the crust, take one quart of flour, one tablespoonful of baking powder, a little salt, half a teacupful of lard, and sufficient water to make a stiff dough; roll half the dough to the thickness of one-half an inch; cut in strips and line the dish. Put in half the chicken and half the potatoes; season with butter, pepper, and salt; dredge well with flour and put in some of the crust cut in small pieces. The other half of the chicken and potatoes put in with butter, salt, and pepper, and dredge with flour as before; roll out the rest of the dough for upper crust. Before putting on the cover fill the dish nearly full of boiling water, put in the oven immediately, and bake one hour.

Smothered Chicken.—Singe a young chicken and split it down the back; take out the intestines; wipe it with a damp towel; lay the chicken with inside downward in the baking pan, breaking the breast-bone to make it lie flat; spread the breast with a quarter pound of butter, dredge with pepper, put a teaspoonful of salt and half cup of water in baking pan. Place in a hot oven, let it bake half hour, basting every ten minutes. Now remove the lid, turn the chicken, baste it well on inside, cover and bake another half hour; when done, place on a hot dish, put the pan in which the chicken was cooked on the fire to brown, add one tablespoonful of flour; stir until smooth and brown, add half cup of milk. Stir constantly until it boils; if not properly seasoned add salt and pepper and serve.

Chicken Salad.—Mince the white meat of a cold boiled or roasted chicken, removing all fat, gristle, or skin. Cut celery into bits half an inch long, making three-fourths the bulk of the chicken. Mix and set aside, while preparing the dressing. For this rub to a fine powder the yolks of two hard-boiled eggs, add a teaspoonful each of salt and pepper, and two of white sugar, and then three teaspoonfuls salad oil, a few drops at a time, grinding hard while doing so. Add a teaspoonful of made mustard, and let stand while you whip an egg to a froth. Beat this into the dressing, add a half cup of vinegar, beating it in gradually. Sprinkle a little salt over the meat, toss it lightly with a fork; pour on the dressing, and mix till thoroughly combined. Place in salad bowl, and garnish with egg rings and bleached celery tops. Turkey may be used instead of chicken. Many prefer it.

Roast Game.—To roast a partridge, grouse, or any other gallinaceous bird, is one of the simplest processes of cooking, yet one in which the game is often spoiled by being cooked too fast, the surface becoming scorched before the flesh is fairly warmed through. By this means the flavor is lost, the juices dissipated, and the natural tenderness of the meat destroyed.

The birds should be kept at such a distance from the fire that the flesh may be fully heated before the surface becomes browned. Then move slowly nearer the fire, so that the heat may fully penetrate the flesh. The birds should be basted occasionally with their own drippings, or with melted butter slightly seasoned. Catch the drippings on pieces of thin, crisp toast laid in the pan, one small slice for each bird. When nearly cooked, dredge the birds lightly with flour and cracker or bread crumbs. This unites with the juices and makes a beautiful brown crust.

The process should, if the fire be brisk, occupy about twenty minutes for a partridge, thirty for a grouse, fifteen for a snipe, plover, or woodcock. Serve each bird on a slice of toast, in covered hot dishes. This is the simplest way of cooking every variety of game birds.

Broiled Game.—Partridges, split in the back, and broiled over a bright fire, with a dressing of salt, pepper and butter, make an excellent dish. Care must be taken not to cook them too fast, or the same difficulty above mentioned, of browning the outside before the flesh is warmed through, will result. The fire should not be too hot, nor the gridiron rest too near it. In all cases game should be served on hot dishes.

Rail and Reed Birds.—Rail, when roasted on the spit, enveloped in greased paper, are very good. They should never be stuffed. Fifteen minutes will cook them if the fire be brisk. Reed birds are best when roasted *au naturel* on the spit before a brisk fire. They cook better enveloped in greased paper, there being less waste of the fat. They are good, also, when stuffed with bread crumbs, butter, and a little of herbs; and also when nicely broiled. Some prefer them this way to all others.

Fried Rabbit.—Freeze or soak in salt water over night; cut off all the fat. Boil tender, changing the water once or twice. Dip in a batter and fry in hot butter and lard mixed.

Stewed Rabbit.—Dress and freeze or lay in salt water over night, boil until tender, season with butter, and make dumplings, same as biscuit dough; roll, cut in pieces and drop them in; thicken gravy with a little flour and milk.

Rabbit Smothered in Onions.—Parboil the rabbit, salt, pepper, and roll in flour. Put in pot alternately a layer of rabbit and a layer of onions. Let simmer slowly until done.

Quail on Toast.—Pick dry, draw and split down the back; wash and soak in salt water a few minutes, drain and dry with a cloth. Broil and baste often with butter; set in the oven with bits of butter on each piece and brown nicely. (They may be fried as chicken if desired.) Have ready as many slices of buttered toast as there are birds and serve with breast upward on each slice.

Roast Pigeon.—When clean and ready for roasting, fill with dressing made same as for turkey or chicken. They must be well basted with melted butter, and roast from three-quarters to one hour.

Game Pie.—When several kinds of small game are brought in, the best way to utilize them is to stew each kind tender, add them together with enough butter to make the gravy rich, and make the pie by lining a baking-pan with a rich crust the same as for chicken pie; put in the game, seasoned with salt and pepper, a little of the dough for dumplings, and the gravy after it has been thickened; add top crust, pinch the edges together like pie; bake half an hour in a hot oven.

Meats.

What we call flesh is chiefly composed of muscle, with a certain proportion of fat and a considerable quantity of water. A piece of fresh beef, thoroughly dried, will lose three-fourths of its weight. Starch and sugar, which compose nearly fifty per cent. of wheat bread, are absent from meat. For this reason a due admixture of animal and vegetable food seems best adapted for the nutrition of the human body.

Wild animals have usually very little fat. Domestic animals, fed for the market, have often a large proportion of it. The flesh of heavy sheep may be three-fourths

fat. Such fattening as this is unprofitable to the consumer, causing much waste. Good meat may be told from its firmness and elasticity to the touch, from its marbled appearance, its color, between pale pink and deep purple, its lack of unpleasant odor, and its slight shrinkage in cooking.

The following directions for the choice of meat will be of service to the young housekeeper:

To Choose Beef.—In ox-beef the grains should be loose, the flesh red, and the fat of a fine cream-color. Cow-beef has a closer grain, a whiter fat, and meat not quite so red. Poor beef is indicated by a hard, skinny fat, a dark-red lean. In old animals a line of horny texture runs through the meat of the ribs. When pressed by the finger the meat should rise up quickly, if it does so slowly, age is indicated.

Mutton.—The meat of sheep should have a firm, close grain and dark-red color, the fat being white and firm. If too young, the flesh is tender when pinched; if too old, it wrinkles and remains so.

Lamb.—This meat will not keep long after it is killed. If fresh the large vein in the fore-quarter should be bluish in color; if stale this becomes green. The flesh should be light-colored and juicy, the fat white and rich.

Veal.—Good veal is white, smooth and juicy; the fat white and firm. The flesh of a bull-calf is firmer and darker than that of a cow-calf. If stale, the color changes quickly, the flesh feels moist and clammy, the joints flabby, and there is a faint musty odor.

Pork.—Here we should have a thin, smooth rind, cold to the touch, the fat must be very firm and the lean white. The rind of young pork should yield easily to the finger. The flesh should be smooth and dry; if clammy, it is tainted. "Measly pork" is very unwholesome, and may be told by the fat being full of enlarged glands, or kernels.

Bacon.—This should have a thin rind, and firm and reddish fat; the flesh a tender, clear red, with no yellowish mixture, and clinging closely to the bone.

Ham.—To judge this, put a knife under the bone and up to the knuckle. If particles of meat adhere to the knife or the odor is unpleasant, the ham is not good.

Poultry.—In selecting poultry choose those that are full-grown, but not old. When young and fresh-killed, the eyes are full and bright, the joints neither stiff nor flabby; the skin is thin and tender, so that it may be easily torn with a pin; the breast-bone is pliable, yielding easily to pressure. Fowls, if young, have a hard, close vent, and the legs and comb are smooth. Old turkeys have rough and reddish legs; young ones smooth and black. If fresh killed the eyes are full and clear and the feet moist. A goose, if young, has but few hairs, a yellow bill, and is limber-footed. Ducks, when fat, are hard and thick on the belly; if young and good, they are limber-footed.

Eggs.—Put your tongue to the larger end; if it feel warm, the egg is fresh. Or put the egg into a pan of cold water; if perfectly fresh, it will sink immediately, and so in proportion to its freshness; a rotten egg will float on the top of the water.

Of ordinary meats mutton is at once the most nutritious and the easiest of digestion. Beef is usually considered more strengthening, but demands more vigorous digestive powers. Veal and lamb, though tender, are less digestible than the flesh of mature animals, this being especially the case with veal. Of all meats, however, pork stands first in the rank of the indigestible.

When meat comes from the market it should be wiped at once with a fresh, damp cloth, covered, and put in a cool place. Never wash fresh meat, as cold water draws out the juice. Remove from mutton all the pink skin attached to the meat; if left it will give it an unpleasant taste when cooked. The organs of animals, as the heart and kidneys, should be washed thoroughly; salted meats need washing to remove the salt.

Modes of Cooking Meats.

Meat may be boiled, roasted, stewed, fried, or prepared in other ways. Tender cuts should be cooked in their own juices to preserve the flavor. The meat should at

first be subjected to a high temperature to harden the albumen on the outside and thus prevent the escape of the internal juices. Then the temperature should be lowered to 180 degrees.

Roasting.—In roasting the object is to retain all the juice in the meat. The heat should be sharp at first, for the reason above stated, and then reduced so that the albumen in the interior may be gradually coagulated without shriveling and hardening the fibre. The flesh of young animals is better adapted for roasting than boiling, as it contains more of those principles soluble in water and which may be boiled away. Whenever it is desired to retain and increase the flavor, roasting is the better method. This applies to pork, venison, and game, and to poultry unless it be lean and old.

Boiling.—Meat properly boiled retains more of its nutritious properties and is more easily digested than if cooked in any other way. It loses less in weight than by either roasting or baking. The degree of extraction of juices depends on the degree of heat and the way it is applied. If broth is desired the meat should be soaked in cold water, and the heat applied gradually and kept below the boiling point. To obtain stock for soup, it must come to a boil and this be kept up for some time. But if boiled meat is the object, the joint should be plunged at once in boiling water, so as to coagulate the outer albumen, and the boiling kept up for five or six minutes. Then the temperature should be brought down to 160° F., and the process continued till the interior is fully cooked.

Baking.—In baking the temperature is more equally maintained, and there is less loss of the sapid contents of the meat than in roasting. The joint is richer in flavor and its juices more fully retained. But it is less suitable for delicate stomachs. Great care must be taken that the fat does not come into contact with the hot iron of the stove, as, if burnt, it gives unpleasant and noxious qualities.

Stewing.—This method is intermediate between boiling and roasting, and is much the best method of rendering the meat tender, juicy, and sapid. Meat that would otherwise be quite indigestible may be thus utilized. It also admits of combining a number of articles, both animal and vegetable, and is often the best way to employ canned meats. **Hashing** is the same process applied to meat which has been previously cooked. It often fails for this reason, the meat being made tough and leathery. Very little water is needed for stewing, often the juices proving sufficient, if care be taken to prevent burning.

Broiling.—Broiling has much the same effect as roasting. The purpose is to keep the juice in the meat, which is held over a clear fire for a few seconds, until the albumen on one side hardens. As soon as the juice begins to rise the meat is turned and the albumen on the other side hardened. Continue to turn the meat frequently until it is cooked. Frying, a very common method, produces indigestible meat, the fat, upon which the gastric juices do not act, being thoroughly absorbed, and seriously interfering with digestion.

Beef.

Roast Beef.—The sirloin and rib pieces of the beef are the best for roasting—the latter for small families. Have the butcher remove the bone and skewer the meat into a round shape. It is better, in oven roasting, to dash a small cup of boiling water over the meat when first put in. This acts to check the escape of the juices until the meat is warmed through. If very fat on top, cover with a paste of flour and water till nearly done. Baste frequently, with water at first, then with the drippings. A quarter of an hour to the pound will cook it rare; if it is to be well done, cook longer. Remove, when done, to a heated dish, and make gravy from the drippings, or serve the liquor which runs from the meat when cut. Serve with mustard, or vinegar and scraped horseradish.

Yorkshire Pudding.—This is an excellent addition to a roast of beef. To make it, take one pint of milk, four eggs—white and yolks beaten separately—one teaspoonful of salt, and two teaspoonfuls of baking powder sifted through two cups of flour.

These should be mixed very smooth, and made about the consistency of cream. On taking the roast from the oven, set it where it will keep hot. In the meantime have the pudding prepared. Take two common biscuit tins and dip into them some of the drippings from the dripping-pan; pour half of the pudding into each, set them into the hot oven, and keep them there until the dinner is dished up. Take the puddings out at the last moment and send to the table hot. This is much better than the old way of baking the pudding under the meat.

Broiled Beefsteak.—Place the steak in a wire broiler; hold it over the fire, near the coals; count ten slowly, then turn it; continue to count ten and turn till the meat is done. From five to seven minutes will cook a steak an inch thick; eight to ten minutes if an inch and a half. Season with salt on both sides, but do not put butter on the steak. Serve at once on a hot platter.

Pan-Broiled Steak or Chops.—Buy tender meat. Trim off all the fat possible. Heat a frying-pan very hot, so that it hisses if a little water is dropped in. Lay in the meat, count ten, and turn; count and turn again, and so on until the meat is cooked. A steak or chops one inch thick will require from five to seven minutes. Season and serve in the same manner as broiled meats.

Beefsteak Smothered in Onions.—Season the steak with salt and pepper, dredge with flour, and brown in hot fat. When done on one side, turn and put in the sliced onions, cover, and when the onions are done cover with water. Cook slowly four or five minutes. Or fry the onions separately, and, when done, dish the steak and lay them thickly over the top.

Rolled Steak.—Take a round steak, pound, pepper and salt. Take bread crumbs and make a dressing of them and spread over the top of the steak. Roll and tie it with a string. Put in pan and roast forty minutes.

Beef Stew.—Put on to boil in three quarts of water three pounds of beef without bone. Let boil until tender, and add potatoes; season with salt and pepper. When well done, make a gravy of flour and water, and serve hot.

English Stew.—Cut meat in slices, sprinkle with salt, pepper, and flour. Lay in a dish, and put a few pickles or a small quantity of pickled cabbage over the meat. Take half a teacup of water, add a little vinegar, pour over the meat, bake half an hour. Serve immediately.

Pot Roast.—For this purpose take a tough piece of meat. Cut off some of the fat and melt it in a deep frying-pan or iron kettle. When the fat is hot, put in the meat and brown it on both sides to harden the albumen and keep in the juice. Add one pint boiling water, cover, and simmer slowly until tender; then add one teaspoonful salt. If the water evaporates, do not add any more, as the fat will finish cooking the meat.

Boiled Beef to Serve Cold.—Take a boiling piece of beef, roll and tie, put in kettle with boiling water, salt and pepper. Chop fine one small onion, break in pieces two bay leaves, boil all together; add boiling water as needed. Boil down very low. Let cool in the liquor. Slice cold.

Hamburg Steak.—Chop finely one pound of lean, raw beef, season with salt and pepper, add a few drops of onion juice, one egg, mix all together and make into small balls or cakes. Broil over hot coals, or cook in a small quantity of smoking hot fat. The steaks are much better if allowed to stand several hours before cooking, so that the flavors may blend before the cakes are made up. They may be served with tomato sauce.

Meat Croquettes.—One cup of cold chopped beef, one cup bread crumbs, one egg. Pour over this enough of the hot liquor to make quite soft. Add salt and pepper, make in small rolls, dip in beaten egg, then in cracker crumbs. Fry in hot lard.

Spiced Beef.—Four pounds of round beef chopped fine, trim off the fat, add three dozen crackers, rolled fine, four eggs, one cup milk, one tablespoonful ground mace, two tablespoonfuls pepper, one tablespoonful butter; mix and put in pan, and baste

with water and butter; bake two hours in a slow oven.

Curing Fresh Beef.—To each one hundred pounds of beef take four gallons of water, put in kettle, also six pounds common salt, two ounces saltpetre; simmer over slow fire, and skim. When cold pour over beef, which should be loosely packed. Hang in about three weeks, or put in new brine, or boil and skim the old.

Beef Tongue.—Wash the tongue and soak over night in cold water. Put it into a pot of cold water, and boil slowly until it is tender to the centre. When cold, take it from water, pare off the skin, cut in round slices, and garnish with parsley. Tongue is considered better than ham for sandwiches.

Pickled Beef Tongue.—Wash tongue thoroughly, soak over night in salt water; put in cold water and cook until tender, remove the skin while warm; put in stone jar, cover with hot vinegar to which is added one teaspoonful of mixed spices. This will keep for some time.

Dried Beef.—This is commonly served raw, shaved into thin slices; but is more savory if cooked. Put the slices into a frying-pan, cover with boiling water; cook for ten minutes, then drain and cut into small bits. Return to pan with a little butter, and stir into the pan four well-beaten eggs for a half pound meat; stir and toss the mixture for about two minutes. Serve in a covered dish.

Boiled Corned Beef.—Skewer your piece into shape, wash it in three or four waters, and tie it up with stout twine. Cover it in a pot with cold water. In boiling, give about twenty minutes to a pound, turning it three times while cooking. When done, drain dry and serve with drawn butter in a sauce boat. Boiled turnips are eaten with the meat.

Roast Veal.—Cook veal longer than lamb or mutton, allowing at least a quarter hour to each pound. Heat gradually and baste frequently. When nearly done, dredge lightly with flour and baste once with melted butter. If browning too fast, cover with white paper. Breast and fillet of veal need to be filled with a dressing made of bread crumbs, chopped thyme or parsley, seasoning, and a beaten egg.

Veal Cutlets.—Sprinkle the cutlets with salt and pepper, dip in beaten egg, roll in cracker crumbs, and fry in hot lard or dripping. A little boiling water may be added to the gravy when the meat is dished, and a thickening of brown flour.

Veal Stew.—Two pounds of veal, one tablespoonful of lard, one tablespoonful of butter; slice one medium sized onion over the meat, add one-half teacup of vinegar, as the meat stews add a little water. Cook two hours.

Veal Fricassee.—Take two lbs. of shank or neck of veal, remove bones, place them in a saucepan, season, add two cups cold water, and cook slowly. While cooking slice two onions, cut the meat into inch cubes, remove the fat, and dredge the meat with flour. Fry the onions brown and add to the water. Brown the meat slightly and add. Let simmer half an hour. Cook together one tablespoonful each of flour and butter, add gradually half cup of milk, and stir it into the fricassee. Boil five minutes and serve.

Calf's Head.—After washing, take out the brains and put in a cool place. Tie the head in a floured cloth and boil for two hours, adding some salt to the water. Wash and carefully pick the brains, cleansing them till quite white; cover with water and stew; mash smooth, and add gradually a cupful of the water in which the meat is boiled. Season with butter, parsley, sage, pepper and salt. Drain the head very dry, score the top and rub it over with melted butter; dredge with flour and set in the oven to brown. When served, pour the gravy over it. Do not skin the head. Mock-turtle soup is made of calf's head, chopped fine, well seasoned and boiled, the brains being used with the yolks of eggs to make force-meat balls.

Fried Sweetbreads.—To fry sweetbreads, wash carefully and rub dry, lard with narrow strips of fat pork, and lay in a hot frying-pan, well greased, and cook to a

fine brown. Turn frequently, till the pork is crisp.

Broiled Sweetbreads.—Rub well with butter, and cook on a clean gridiron. Turn frequently, occasionally rolling on a plate with some hot melted butter. This keeps them from getting dry and hard.

Stewed Sweetbreads.—Remove all skin and fat, cover with cold water, and bring to a boil. Pour off the hot water, and cover with cold until they are firm. Stew a second time in very little water. When tender, add a teaspoonful of butter for each sweetbread, with pepper, salt, chopped parsley and a little cream. Simmer for five minutes, and serve in covered dish, with the gravy poured in.

Sweetbreads with Tomatoes.—Soak in salt water for one hour; take out, pepper and dip in bread crumbs and fry in hot fat, when done put in a dish and pour tomatoes over sweetbreads. Prepare tomatoes by straining through a sieve and season with salt, pepper and butter, thicken with flour, cook until thick.

Mutton.

Roast Leg of Mutton.—Remove the bone from a leg of mutton and mix a filling as follows: one cup rolled cracker or bread crumbs, and one teaspoonful each of salt and sage, with sprinkle of pepper. Mix these, scald a little dropped onion—if liked—and add; moisten with milk or water. Sprinkle the cavity with salt, fill it and sew. Dredge with salt, pepper and flour. Place the meat on a rack in a roasting-pan, and bake in a hot oven, allowing twenty minutes to a pound. Baste once in fifteen minutes. When done, remove the strings and put the meat on a hot platter. Pour off the fat from the pan, stir half tablespoonful flour into the browned sediment, add one cup boiling water and boil five minutes. Strain and serve as a gravy.

Chickens and other poultry may be filled and roasted as directed. Beef is usually roasted without filling, and mutton frequently.

Leg of Mutton a la Venison.—After removing the rough fat from the mutton, lay it in a deep earthen dish, and rub on thoroughly the following compound: One tablespoonful of salt, one each of celery-salt, brown sugar, black pepper, English mustard, allspice, and some sweet herbs, all powdered and mixed. Then pour over the meat a teacupful of good vinegar, cover tightly, and set in a cool place four or five days, turning it and basting often with the liquid each day. To cook, put in a kettle a quart of boiling water, place over it an inverted shallow pan, and on this lay the meat just as removed from the pickle; cover the kettle tightly and stew four hours. Do not let the water touch the meat. Add a cup of hot water to the pickle remaining and use it to baste with. Make a gravy by thickening the liquid with flour and straining through a fine sieve. Serve with currant jelly, as for venison.

Stuffed Shoulder of Mutton.—Have the butcher remove the blade from a shoulder of mutton. Fill the cavity thus formed with a stuffing of well-seasoned bread crumbs and a half pint of oysters. Sew up and press into shape. Baste frequently while roasting. When done remove all fat from the drippings in the pan and thicken slightly. Parboil another half pint of oysters and add to the gravy.

Mutton Chops.—Trim off the superfluous fat and skin from your chops, if not done by the butcher; dip each chop in beaten egg, roll in cracker dust, and fry in hot lard or dripping. Omit the egg if desired. Sprinkle the chops with salt before rolling in the egg, or salt the fat. Serve dry and hot.

Broiled Mutton Chops.—Mutton chops should be cut one inch thick. Trim off the skin and the greater part of the fat. Lay the meat in a wire broiler and proceed as in broiling steak. It requires from four to six minutes to cook a chop one inch thick. Season chops with salt and pepper, but no butter, and serve immediately on a hot platter.

Lamb Chops are very delicate and tender. Prepare and broil them in the same way that mutton chops are broiled. They require longer cooking than mutton chops and should never be served rare. A lamb chop

one inch thick should be cooked from seven to ten minutes.

Lamb Stew.—Cut the lamb into small squares, first removing the fat. Then put on in stew-pan, covering with water, and let heat slowly. When partly done add a little sliced salt pork, one or two sliced onions, pepper and salt, and two or three cut-up potatoes. Cover, and continue to stew till the meat is tender. Then drop in a few small dumplings, stew fifteen minutes more, and serve. The gravy should be thickened with a little flour moistened with milk.

Spring Lamb.—Bake six pounds of meat one hour and a half in a moderate oven. Season when put to roast. Baste often. Serve with mint sauce.

Mint sauce: Take a handful of fresh mint, wash and dry. Take leaves and chop fine, add a tablespoonful of sugar, one of water and cover tightly for one hour and a half. An hour before serving add three-fourths cup of vinegar and serve with lamb; add essence of mint if desired.

Pork.

Roast Pork.—Prepare pork by washing. Score the skin in lines, forming little squares. Have a moderately hot oven; baste with its own drippings; season with salt and pepper. The time required depends on size of roast.

Roast Spare Rib.—Cover the meat with a greased paper until half roasted; then remove the paper and dredge with flour. In a few minutes baste with its own gravy. Before taking up strew the surface with bread crumbs seasoned with powdered sage, fine chopped onion, pepper and salt. Cook five minutes and baste again with butter. Skim the gravy, pour in half a cup of boiling water, thicken with flour, season, and pour over the meat.

Spare Rib with Oysters.—Wash ribs, wipe dry, salt and pepper. Take one quart of oysters, one dozen crackers, mash fine, salt and pepper and roll up in spare ribs and pin with wooden tooth pick.

Roast Pig.—Take a pig about six weeks old, wash it thoroughly, and rinse out the inside again with water containing a little baking soda. Wipe with a fresh towel, salt the inside, and stuff with the prepared dressing; making the pig plump, so as to give it its original size and shape. Sew it up, place it in a kneeling posture in the dripping-pan, and tie the legs in proper position. Pour into the pan a little hot salted water, and baste with butter and water a few times as the pig warms; afterwards baste with gravy from the pan. When the meat begins to smoke rub it often with a rag dipped in melted butter. This will keep the skin from cracking while still keeping it crisp. Roast for two or three hours. To make the gravy, skim off most of the grease, stir into that remaining in the pan a good tablespoonful of flour, with water enough to make it the right consistency, season with pepper and let it boil up once. Strain, and add half a glass of wine, if preferred. Turn into a gravy boat. Place the pig upon a large, hot platter, surrounded with parsley or celery tops; place a green wreath around the neck, and a sprig of celery in its mouth. In carving, cut off the head first, then split down the back, take off the hams and shoulders, and separate the ribs.

Pork Steaks.—Remove the skin and trim neatly. Broil over a brisk fire. Season after taking up with pepper, salt, a little sage and minced onion. Cover and set in the oven for five minutes. Spare ribs can be cooked in the same manner.

Salt Pork Fried in Batter,—Prepare as for plain fried pork, fry without putting in flour. When ready to remove from dripping pan dip in a batter made as follows: One egg, two tablespoonfuls milk, two of flour, add a little salt, and dip the fried pork into the batter. Put quickly back into the hot drippings, fry a light brown, and serve as soon as possible.

Pork Chops.—Season pork with salt and pepper, beat up an egg, dip the pork in the egg, then in cracker crumbs or corn meal, fry in plenty of lard, boiling hot.

Boiled Ham.—Soak over night, and wash hard next morning with a stiff brush or coarse cloth. Put on to boil with plenty

of water. Do not boil too fast, and allow fifteen minutes to each pound. Do not remove skin until cold. Prepare for table by garnishing with dots of pepper or dry mustard, and with parsley around the sides.

Broiled Ham.—Cut in slices, soak well in scalding water, wipe dry, and lay in cold water for five minutes. Wipe again, and broil over a clear fire. Pepper before serving. To fry ham, prepare as for broiling, and cook in a hot frying-pan, turning often. Serve with or without the gravy.

Baked Ham.—Boil a ten pound ham in water enough to cover, to this add two pounds of brown sugar. Boil three hours, then skim. Mix a tablespoonful of dry mustard and one of sugar, sprinkle over the fat side, and bake from three quarters to one hour.

Devilled Ham.—Take cold roast ham; chop fine; make a dressing of pepper, mustard, and vinegar; mix thoroughly with the ham. This is very suitable for sandwiches.

Broiled Ham and Bacon.—Cut ham into half-inch slices, or thinner. Trim off the outside skin. Broil in a hot dry pan or over the coals, until it is a delicate brown in color, turning it frequently. When done serve on a hot platter.

To cook bacon, cut it into very thin slices and broil it a few minutes in a hot pan or over a clear fire, turning it very often. It should be of a delicate golden-brown color when done. Serve on a hot platter.

Pork Pie.—One pound of pork chopped in small pieces, four good sized potatoes chopped in squares, cover over with water and cook until tender. Cook meat awhile before putting potatoes in. Make a gravy and pour over; save out some of the gravy to pour over when baked. Make a short dough same as for pies, with a little baking powder in it. Line a small bread pan with crust, put in meat and gravy, cover with upper crust and bake until brown.

Ham Pie.—Make a crust, the same as for biscuit, line pan with dough; then put in a layer of potatoes sliced thin, pepper and salt, and a little butter, then a layer of lean ham, add water and cook slowly.

Pigfoot Sauce.—Cut off the toes, scrape clean and wash thoroughly, and singe. Put in water, boil and skim. Pour off the water and add fresh, then salt, and some lean pieces cut from the head, or other part of the hog. Boil until ready to fall to pieces; dip out and pick all the bones out. Season with salt and pepper. Mix the lean meat with the fat, but do not chop. Press in a crock and set away to cool. Slice thin and pour vinegar over it a few minutes before serving.

Head Cheese.—Boil the forehead, ears, and feet, and trimmings from the hams of a fresh pig. Continue until the meat is ready to drop from the bones. Then separate the meat from the bones, put it in a large chopping-bowl, and season with pepper, salt, sage, and summer savory. Chop it rather coarsely; put it back in the boiling kettle, with enough of the liquor it was boiled in to prevent its burning, and warm it thoroughly, mixing the ingredients well. Then pour into a strong muslin bag, press the bag between two flat surfaces under a heavy weight. When cold and solid it can be cut and served in slices.

Boston Pork and Beans.—Carefully pick a quart of small, white beans, and let them soak over night in cold water. In the morning wash and drain in fresh water. Set on to boil in plenty of cold water, in which is a piece of soda the size of a bean. After they come to a boil drain again, cover again with water, and boil for fifteen minutes, or until the skin of the beans will crack when taken out and blown upon. Next drain the beans, put into an earthen pot, with a tablespoonful of salt, and cover with hot water. Place in the centre of the pot a pound of salt pork, first scalding it with hot water, and scoring the rind across the top a quarter of an inch apart. Place in the oven, and bake six hours or longer, keeping the oven at a moderate heat. Add hot water from the teakettle as needed, so as to keep the beans moist. When the meat becomes crisp and looks cooked remove it, as too long baking destroys the solidity of the pork.

Venison.

Venison Cutlets.—Trim your cutlets nicely, using the trimmings to make gravy, in the proportion of half a pound to a cup of

Roast Turkey

PRACTICAL DIRECTIONS

Remove tendons from the legs, singe and draw the turkey ; remove pin feathers, wash and dry carefully ; fill with stuffing if desired ; cover the breast with thin slices of salt pork, scored lightly and fastened in place with strings or small skewers, and set on the rack of a baking pan into a hot oven. Turn the bird often that the heat may sear over the outside uniformly and thus keep the juices within. When this has been accomplished that is, in about fifteen to thirty minutes, add a little hot water and drippings to the pan, and as soon as possible reduce the temperature to that of ordinary baking. Baste every ten minutes, dredging with flour after each basting. When half cooked add salt to the flour. When the joints will separate easily the cooking is completed. Three hours are required to roast a ten-pound turkey. When the fowl is nearly cooked, remove the pork from the breast, baste with a little butter melted in hot water and return to the oven for final browning ; baste several times or until the desired color is attained. Garnish with water cress, cover the ends of the drum sticks with paper frills. Serve, at the same time, Giblet Sauce made of the browned flour in the pan, additional flour if needed, the water in which the giblets were cooked, and the giblets chopped, but not too fine. In America cranberry sauce accompanies this roast ; in England gooseberry sauce is in evidence.

water. Put in bones, fat, etc., and let stew in a saucepan while you prepare the cutlets. When the gravy has stewed an hour, strain and let it cool.

Lay the cutlets in a saucepan, with a little onion to each. Also a little minced thyme and parsley, pepper, and very little nutmeg. When all ready, pour in your warm gravy. Stew twenty minutes. Then lay the cutlets in a frying-pan, and fry quickly for five minutes, turning frequently. Lay in a chafing-dish, pour in the gravy, having added to it a little sauce, currant jelly, half a glass of wine, and flour thickening. Let all stand in hot place five minutes before serving.

Roast Venison.—Wash and dry with a cloth. Butter a sheet of white paper and put over the fat. Put in roasting pan with a little boiling water. Cover closely; cook in a moderately hot oven for two or three hours. Baste occasionally. Twenty minutes before it is done quicken the fire, remove lid and paper, dredge with flour, butter, salt and pepper. Return to oven and brown. Make a gravy from its own drippings, having first removed the fat. Have meat platter very hot for venison and serve with currant jelly.

Hashes and Sandwiches.

Potato and Meat Pie.—Chop cold meat fine, removing the bones, fat and gristle. Put the meat into a pudding-dish, measuring it to find the quantity. To each cup of meat pour one-third cup of gravy or stock, or one-quarter cup water. Taste the gravy, stir in one-quarter tablespoonful salt, a sprinkle of pepper, and a few drops of onion juice or a little chopped parsley. Boil and mash potatoes, and spread the mashed potatoes as a crust over the meat and gravy. Smooth the crust, and bake the pie on the grate of the oven until golden-brown. It will require from fifteen to thirty minutes.

Hash.—Chop the meat as in the preceding recipe. To each cup of meat add two cups mashed potatoes, one-half tablespoonful salt and a sprinkle of pepper. Mash together thoroughly. Put one-half tablespoonful drippings into a fry-pan. When the fat smokes scrape in the hash, and let it cook slowly until browned on the bottom. Fold over in the middle, and serve on a hot platter. Stewed tomatoes or onion juice or boiled onions chopped, if added to the hash, will improve it.

Vegetable Hash.—To the ingredients of the above recipe add chopped beets, turnips, beans, or a little cabbage. One or all of these vegetables may be used. Moisten the mixture with milk, put it in a saucepan, and stir it twenty minutes over the fire, until the milk is absorbed and the hash is thoroughly cooked. The hash may be put in a covered kettle and set in a moderate oven for two or three hours. The long, slow cooking causes the flavors of the vegetables to blend, and gives it a rich taste.

Baked Hash.—Chop meat fine, put a layer of meat in the baking pan, then a layer of potatoes, mashed or cut in cubes, then a layer of bread crumbs. Season with butter, salt and pepper, enough water to moisten. Bake three-fourths of an hour.

Ham Sandwiches.—Four pounds of ham chopped fine. Dressing: Yolks of four eggs, four tablespoonfuls of vinegar, one small teaspoonful of mustard, one-half teaspoonful of black pepper, juice of one lemon, a little cayenne pepper if desired. Cook until thick; mix with ham and spread between slices of buttered bread.

Dried Beef Sandwiches.—Chop dried beef fine, removing all stringy pieces. Spread between thin slices of buttered bread. These are much easier to digest than ham sandwiches.

Tongue Sandwiches.—Wash the tongue and soak over night in salt water, put on in cold water, boil until tender, take out, remove skin while warm, when cold chop fine. Make a dressing as follows: Yolks of four eggs, four tablespoonfuls vinegar, one small teaspoonful of mustard, one-half teaspoonful pepper, juice of one lemon; cook until thick and mix with chopped tongue, and spread between slices of buttered bread.

Salmon Sandwiches.—One can of salmon chopped fine, one cup bread crumbs, one egg, one tablespoonful of melted butter; season with salt and pepper; mix well, and put in two greased one-pound baking

powder cans, with lids on; boil one and a half hours, then take out of cans and brown in the oven. When cold, slice thin and place between slices of bread.

Oyster Sandwiches.—Take a pint of raw oysters and chop them very fine. Add salt and pepper. Put them in the chafing dish with a teaspoonful of butter and three tablespoonfuls of dry biscuit crumbs; after cooking for five minutes they are ready to make up into sandwiches.

Cucumber Sandwiches.—Slice cucumbers thin and place in salt water on ice until ready to use. Butter sparingly thin slices of wheat bread; roll the cucumbers in Mayonnaise dressing and place between two slices of bread.

Lettuce Sandwiches.—Slice thin nice homemade bread, at least one day old, spread thin with good butter; cut in desired shape, dip lettuce leaf in Mayonnaise dressing and lay between.

Eggs

Eggs form a valuable food and should be used as a substitute for meats and in combination with starchy foods. Fresh eggs should always be used, if obtainable.

If eggs are placed in boiling water and allowed to boil, the white becomes tough and indigestible and the yoke undercooked; therefore they should be cooked at a temperature below boiling point.

Boiled Eggs (A).—Have a saucepan of boiling water. Remove to the back of the stove where the water will not boil and add the eggs, being careful that there is sufficient water to cover them. Let them stand from seven to ten minutes if required soft—forty to forty-five minutes if wanted hard.

Boiled Eggs (B).—Cover the eggs with cold water and place over fire. When the water begins to boil they will be cooked properly for soft boiled eggs. If allowed to remain four or five minutes they will be *hard boiled*.

Mustard Eggs.—Remove shells from one dozen hard boiled eggs, cut in halves, take out yolks, add to them salt, ground mustard and pepper, mix all together, add vinegar to moisten; then fill whites with the yellow mixture and serve.

Poached Eggs.—Break eggs, one at a time, into a cup. Put a quart of boiling water and half teaspoonful salt into a saucepan. Let it boil, then move it back on the stove so that it will just cease to bubble. Place muffin rings in the pan. Drop the eggs into the rings one at a time, and cook until the white is firm. Serve them on toast, with a sprinkle of salt on each egg.

Fried Eggs.—Break the shells and drop the eggs one by one in hot fat; dip the fat over them until the white is set; dust with pepper and salt and serve hot; cook from three to five minutes, according to taste. These are less digestible than poached eggs, the hot fat making the albumen leathery.

Scrambled Eggs.—Beat six eggs very light; add a little salt, eight tablespoonfuls of milk, and a small lump of butter. Put in a hot skillet and stir constantly until the eggs harden.

Pickled Eggs.—One pint of strong vinegar, one half pint cold water, a teaspoonful each of cinnamon, allspice and mace; boil eggs till very hard, remove shell; put on the spices tied in a white muslin bag in cold water, boil and, if water wastes away, add enough so as to have half a pint when done, add vinegar and pour over the eggs, put in as many eggs as the mixture will cover.

Sauce for Eggs.—Boil six eggs hard and make a sauce of one lump of butter, one tablespoonful of flour and one pint of milk, mix the butter, milk and flour together and boil. Slice the eggs and pour the sauce over them,

Plain Omelet.—Beat two eggs, add two tablespoonfuls milk or water, and one quarter teaspoonful salt. Heat the pan, put in one teaspoonful butter, and when it melts pour in the mixture. Cook the omelet slowly. As it hardens beneath, raise it with a broad knife and let the liquid portion run under; do this at different sides of the pan. When dry, roll the omelet away from the handle of the pan. Serve on a hot platter.

Foamy Omelet.—Separate the eggs. Beat the yolks and add salt and one table-

spoonful milk for each yolk. Beat the whites until stiff and fold lightly into the liquid. Melt some butter in a frying-pan, when hot pour in the mixture and brown. Then place the omelet in the oven to dry the top. Fold and serve immediately.

Foamy Omelet with Jelly.—Separate the eggs; beat the yolks and add one tablespoonful milk for each egg, a saltspoonful of salt, a dash of pepper and a teaspoonful of flour. Put a teaspoonful of butter in a skillet and when it begins to bubble turn in the omelet. Fry to a golden brown, remove carefully from the skillet, spread with an acid jelly, fold over, and place in lettuce leaves. Beat the whites of the eggs stiff, sweeten slightly and put a thick coating on top the omelet.

Meat Omelet.—Mix two tablespoonfuls of chopped meat with the plain omelet and cook as directed. A little chopped parsley may be added. When the omelet is cooking, spread chopped meat over half the top and fold double. Oysters, whole or chopped, or stewed tomatoes, may replace the meat.

Ham and Eggs.—Fry the eggs in lard, and, after draining off all grease, lay them on a hot dish, with neat slices of fried ham around the edges. Trim the eggs to smooth edges, and cut the ham evenly in oblong pieces. Garnish with parsley.

Vegetables and Their Preparation.

In the cooking of vegetables it should be borne in mind that all woody tissues, whether in the roots or stalks, the husks or skins, are nearly devoid of nutriment and quite indigestible; they should, therefore, be removed. Vegetables should generally be boiled, this being continued long enough to disintegrate the tissues and allow the starch granules to break up. The saline and saccharine constituents being extracted by the water, vegetables lose some of their main elements—especially if the water be soft. This renders it advisable to add a little salt to the water. The salt also acts to preserve the color of green vegetables. The garden vegetables of this country are numerous and varied in character, and may be served in many ways. Chief among them are potatoes and tomatoes, which rank amid the most constant constituents of meals.

Boiled Potatoes (*with the skins*).—Select potatoes of uniform size, wash well in salted water and boil till a fork will penetrate with ease to the center of the largest. Then pour off the water, sprinkle with salt, and dry over the fire. Peel quickly and serve in an open dish.

Without the Skins.—Pare very thin, so as to preserve the starch, much of which lies next the skin. To this the mealiness of the potato is due. Leave them half an hour in cold water, then put in slightly salted boiling water and boil gently till tender. Drain, salt, and dry as above. Some varieties of potatoes cook best by putting on in cold water and bringing to a boil; others best as above directed.

Fried Potatoes.—Pare, wash and slice some new potatoes, or cold boiled potatoes, season with pepper and salt, and fry lightly in dripping or butter, turning them constantly until nicely browned.

Saratoga Chips.—Peel good-sized potatoes, and slice them as evenly as possible. Drop them into ice-water; put a few at a time into a towel and press, to dry the moisture out of them. Then drop them into a pan of simmering hot lard. Stir occasionally, and when of a light brown, sprinkle with salt; take them out with a perforated skimmer, shake both an instant. They will be crisp and not greasy.

Potato Croquettes.—Take two cups of cold mashed potato, season with a pinch of salt and pepper, and a tablespoonful of butter. Beat the whites of two eggs thoroughly and add. Make into small balls, dip them in the beaten yolks of the eggs, then roll either in flour or cracker crumbs; fry the same as fish-balls.

Baked Potatoes.—Wash some large potatoes, wipe, and bake in a quick oven till tender. Break the skins that the steam may escape. Serve in a napkin with the skins on. Three quarters to an hour should suffice to cook them.

Lyonnaise Potatoes.—Cut cold boiled potatoes into cubes, season with salt and pepper. Fry two tablespoonfuls chopped onions in an equal quantity of beef dripping or butter till light brown; then put in the potato and cook till it takes up the fat. Add some chopped parsley and serve. The flavor will be improved by a teaspoonful of vinegar.

Creamed Potatoes.—Cut four cold potatoes into cubes or slices, and put them, with a half cup of milk, into a pan or double boiler; cook till they have absorbed nearly all the milk. Add two tablespoonfuls butter, cook five minutes longer, and serve hot. You may add to the seasoning a little chopped parsley.

Potato Puff.—Beat the yolks of two eggs and add salt and pepper. Add two tablespoonfuls butter to a cup of hot milk, mix it into the potatoes, and beat in the yolks. Beat the whites till stiff, and pour into the potato. Bake in a moderate oven about twenty minutes, or until the mixture browns and puffs up.

Roast Potatoes with Beef.—Pare potatoes and place in roasting pan with beef, basting when you do the beef; let bake until tender and brown.

Mashed Potatoes.—To four medium-sized potatoes, measure one tablespoonful butter, quarter teaspoonful salt, a sprinkle of pepper, eight tablespoonfuls milk, heated. Mash the hot potatoes in the saucepan in which they were boiled. Beat with a wire masher until light, and serve in a hot dish.

Brown Potato Balls.—Mash and season cold baked or boiled potatoes, or use cold mashed potatoes. Roll the potato mixture into balls, or pat into flat cakes. Place on a buttered tin, put a small piece of butter on top of each, and bake on the grate of a hot oven until golden-brown.

Surprise Balls.—Roll the potato balls as above, and with a teaspoon press a hollow in the top. Chop fine some cold, lean meat, season it with salt and pepper, and put one teaspoonful of the meat into the hollow of the potato ball. Put a little butter on the top of each ball, and brown in the oven on the grate.

Scalloped Potatoes.—Butter a baking dish, pare potatoes and slice them thin, put in dish a layer of potatoes, then a layer of onions, a few bread crumbs, sprinkle each layer with salt and pepper and butter, keep on this way till dish is nearly full, then fill with milk or cream, cover and bake one hour. The onions may be omitted.

Boiled Sweet Potatoes.—Choose potatoes of the same size, if possible. Put into boiling salted water, and cook till a fork will easily pierce the largest. Pour off water and let dry in oven for five minutes. Peel before serving.

Fried Sweet Potatoes.—Scrape and slice sweet potatoes, sprinkle a little salt over them, use lard and butter in frying-pan. put in potatoes and fry brown. Serve very hot,

Stewed Sweet Potatoes.—Use small sweet potatoes, pare and boil tender. Make thickening of cream and flour; pour over potatoes, let boil; add salt and pepper to taste.

Fried Tomatoes.—Wash the tomatoes and cut them in slices without removing the skin. Mix together, sprinkle pepper, quarter teaspoonful salt and tablespoonful flour, and dredge the slices thoroughly on both sides. Have ready in the frying-pan enough melted butter to cover the bottom of the pan, and when hot lay in the tomatoes. When cooked, place them on a hot dish and keep them hot. Add half cup milk or water to the liquid in the pan. Melt and brown together half tablespoonful butter, half tablespoonful flour and quarter teaspoonful salt, and add the liquid from the pan. Pour through a wire strainer and serve with the tomatoes.

Stewed Tomatoes.—Pour boiling water on them to loosen the skins; peel and cut up, extracting all hard and unripe parts. Stew in a saucepan half an hour; then add salt and pepper, a teaspoonful white sugar, and a tablespoonful butter. Stew slowly fifteen minutes more. A little grated bread may be used for thickening.

Stuffed Baked Tomatoes.—Cut a thin slice from the blossom end of large, smooth tomatoes, scoop out the inside and chop it up fine with some grated bread, green corn,

butter, and a seasoning of salt, pepper and sugar. Mix well and stuff the hollowed tomatoes, replace the sliced pieces, bake three-quarters of an hour in a deep dish, until brown. Do not peel the tomatoes.

Scalloped Tomatoes.—Butter the sides and bottom of a pudding-dish. Put a layer of bread crumbs in the bottom, on which put a layer of sliced tomatoes, and season with salt, pepper and some bits of butter, and a very *little* white sugar. Then repeat with another layer of crumbs, another of tomato, and seasoning, until the dish is filled, having the top layer of slices of tomato, with bits of butter on each. Bake under cover until they are well cooked through; remove the cover and brown quickly.

Boiled Cabbage.—Wash the cabbage in cold water, trim off the limp outside leaves, cut into eight pieces, or, if it must be cooked quickly, chop it into smaller pieces. Put it into a kettle and cover with boiling water, allowing one-half teaspoonful salt to each quart of water. Do not cover the kettle and there will be very little of the cabbage odor in the house. A young cabbage requires about thirty minutes to cook. When the cabbage is done the water may be drained off, and a little milk, one tablespoonful butter, one teaspoonful salt, and a sprinkle of pepper added. Boil up once and serve.

Vinegar is generally placed on the table with boiled cabbage. Drawn butter may be eaten with it, and is an improvement. Cabbage may be boiled in the water in which corned beef or ham has been cooked.

Cooked Cabbage.—Chop cabbage fine, cook in kettle with enough water to cover; season with salt, pepper and meat drippings. Serve with vinegar.

Stewed Cabbage.—Cut a hard white head of cabbage in two pieces, cut one piece as fine as possible, and put in a stewpan with a piece of butter the size of an egg. Salt and pepper, sprinkle with flour and sugar, and a little water, and let cook. Make a dressing of one egg, one teaspoonful cream, one cup of weak vinegar. Pour over cabbage about five minutes before removing from fire.

Ladies' Cabbage.—Boil a firm white cabbage for fifteen minutes, drain and add fresh boiling water. When it grows tender, drain and set aside until cold. Chop fine; add two beaten eggs, a tablespoonful of butter, some pepper and salt, and three tablespoonfuls of rich milk or cream. Stir all well together, and bake in a buttered pudding-dish until brown. Serve very hot. The prepared cabbage resembles cauliflower and is a very digestible and palatable dish.

Sour-crout.—Barrels having held wine or vinegar are generally used in which to prepare sour-crout, but it is better to have a special barrel for the purpose. Slice white and firm cabbages into fine shreds. There are instruments for this purpose. At the bottom of the barrel place a layer of coarse salt, and add alternately layers of cabbage and salt, being careful to have one of salt on the top. As each layer of cabbage is added, it must be forced down with blows of a heavy pestle, fresh layers being added as soon as the juice floats on the surface. The cabbage should be seasoned with a few grains of coriander, juniper berries, etc. When the barrel is full it must be put in a dry cellar, and covered with a cloth, under a plank, on which heavy weights are laid. At the end of a few days it will begin to ferment. During this process the pickle must be drawn off and replaced by fresh, until the liquor becomes clear. This should be done every day. Finally, renew the cloth, wash the cover, replace the weights, and let stand for a month. By that time the sour-crout will be ready for use. Care must be taken to let the least possible air enter the sour-crout, and to have the cover perfectly clean. Each time the barrel has to be opened it must be carefully closed again. To neglect these precautions may ruin the operation.

Sour-crout is often fried in the same manner as fried cabbage, excepting that it is first boiled until soft in just enough water to cook it. Vinegar should be added after frying.

Boiled Cauliflower.—Take off leaves and cut stalk close to flower bunch. Soak in cold water half an hour, then tie in coarse bobbinet lace or cheese-cloth to

prevent breaking, put into boiling salted water and cook until tender. Serve with drawn butter.

Scalloped Cauliflower.– Boil until tender, cut up and pack, stems downward, in a buttered pudding-dish. Take a cup of breadcrumbs, add two tablespoonfuls melted butter and six of milk; beat to a soft paste, season with salt and pepper, add a beaten egg, and cover the cauliflower. Cover the dish and bake in a hot oven six minutes. Remove cover and brown. Serve hot.

Boiled Onions.—Place onions in cold water and peel. Then cover with boiling water in a saucepan. Cook fifteen minutes, drain, and cover again with boiling water. Repeat this twice; cook until they can be pierced with a wire skewer. Drain and season with salt, pepper, and plenty of butter. Serve with drawn butter.

Fried Onions.—Peel, slice, slightly parboil, drain, and fry until brown in equal quantities of lard and butter. Cover until they are perfectly soft, then remove the cover, cook until brown, and season with salt and pepper.

Boiled Green Corn.—Test corn with finger nail. When the grain is pierced the milk should jet out, and not be thick. Strip off the outer leaves, turn back the inner covering, and pick off all the silk. Then replace the inner husks. Put into salted boiling water, and cook fast for from ten to twenty minutes, according to size and age of the ears. Cut the stalks off close to the cob, and send to table wrapped in a napkin.

Or the corn may be cut from the cob while hot, and seasoned with butter, salt, and pepper. Serve hot in a vegetable dish.

Green Corn Fritters.—Grate the corn; use with each cupful an egg and a half and a tablespoonful milk or cream. Beat the egg, and gradually add the corn, still beating. Put a tablespoonful of melted butter to the pint of corn; stir in the milk, and thicken with a little flour. Salt to taste. Fry in hot lard, or cook on a griddle, like batter cakes.

Baked Corn.—To two cups of chopped corn (either fresh or canned) add two beaten eggs, one-half teaspoonful salt, speck of pepper, one tablespoonful melted butter, and two cupfuls scalded milk. Bake in a buttered pudding dish until firm.

Corn Pudding.—Scrape or grate the corn from a dozen ears of tender green corn. Beat separately the whites and yolks of four eggs. Mix the corn and yolks, and stir hard while adding two tablespoonfuls of butter. Then add one quart of milk, a tablespoonful of sugar and a little salt and pepper, and lastly the whites of the eggs, stirring constantly. Bake slowly at first, covering the dish, for an hour. Then take off the cover and brown. This pudding can be made from canned corn in winter, by chopping the corn fine. It is a delicious accompaniment to a meat course.

Stewed Corn.—Shave corn off the ear; to three pints of corn add three tablespoonfuls of butter, pepper and salt to taste, and just enough water to cover; place in pan, cover and cook rather slow, from half hour to an hour, stirring often; just before it is done, add a half cup sweet cream thickened with a little flour.

Scalloped Corn.—Cut corn off the cob, put into baking dish a layer of corn, then a layer of breadcrumbs, sprinkle with salt, pepper and lumps of butter, then a layer of corn, putting corn on top with lumps o butter, and pour in cream or milk till quite moist. Bake thirty minutes.

Green Beans.—To cook green beans (fresh from the vines) without pork, have the kettle hot, and put in a tablespoonful of lard, let it get hot, stir in the lard one tablespoonful of flour, let brown a little, then pour in a half gallon of cold water, then add beans, salt and pepper to taste. Cook until tender.

String Beans.—Break off the end that grew to the vine, drawing off at the same time the string upon the edges. Repeat this process from the other end; cut the beans with a sharp knife into pieces half an inch long, and boil them in just enough water to cover them. They usually require two and a half hour's boiling; but this depends upon their age and freshness. After they have boiled until tender, and the water

boiled nearly out, add pepper, salt, a tablespoonful of butter, and a half a cup of cream.

Lima and Butter Beans.—Soak a while in cold water; then put into a pot well filled with boiling water and a little salt. Boil until tender. Drain and butter well when dished. The average time to cook is forty minutes.

Boston Baked Beans.—Soak one quart of pea beans over night. Drain, cover with fresh water to which half teaspoonful of soda has been added and cook slowly until the skins wrinkle. Drain again and put in bean pot with half pound salt pork, half tablespoonful salt and two tablespoonfuls molasses. Cover with boiling water and bake at least eight hours. The pork should be buried in the beans, leaving the rind exposed.

Succotash.—This is made of green corn and Lima, string, or butter beans. The corn, when cut from the cob, should be a third more than the beans. Just cover with boiling water, and stew together until tender, stirring now and then. Then pour off nearly all the water, add a large cupful of milk, and stew for an hour, watching to prevent burning. Stir in a large lump of butter, a teaspoonful of flour moistened with milk, pepper and salt. Boil up once, and serve in a deep vegetable dish.

Green Peas.—Take fresh peas, hull them, put in pan in cold water for half an hour, and cook twenty or thirty minutes in small quantity of boiling water. Drain, season with pepper and salt and plenty of butter. Serve hot.

Boiled Peas or Beans.—Choose fresh, green peas or beans. Put them into a kettle with just enough boiling water to keep them from burning. Boil until they are soft. To one pint of the vegetables add one tablespoonful butter, a sprinkle of pepper, and a little salt, if necessary. Serve in a hot dish.

Dried Peas or Beans.—Pick them over and remove specks, pebbles, and faulty peas or beans. Soak in cold water a few hours or over night. Pour off the water, add fresh cold water, and set on the back of the stove to heat slowly, and simmer until soft. If desired to use as soup, they may be boiled until they fall to pieces and form a soft, pulpy mass. Split peas need to be soaked only half an hour before cooking.

Boiled Beets.—Take small, smooth beets; wash carefully, and put into boiling water. Boil an hour or two, or until tender. Do not probe them, but press with fingers to see if they are done. Take up, lay in a pan of cold water, and peel. Cut into slices, season with salt, pepper, butter, or vinegar. Serve hot.

Cooked Beets with Dressing.—Cook beets and slice in saucepan, and pour the following dressing over them: One small teacupful vinegar (if strong dilute with water), a tablespoonful each of sugar and butter. Salt and pepper to taste. One tablespoonful of corn starch, dissolved in water; stir all together and boil until thick; pour over the beets, and send to the table in a covered dish.

Boiled Beets.—Scrub the beets without breaking the roots. Boil until they can be easily pierced with a skewer. Young beets require thirty or forty minutes to cook; old beets from one to two hours. When done dip into cold water, rub off the skin, cut off the tops and roots, and slice. Sprinkle with salt and pepper, and pour on melted butter and serve. Never boil beets with any other food, on account of their color.

Spinach.—Pick off the roots and decayed leaves; wash thoroughly in three or four waters. Put the spinach into a large kettle, without water. Put it on the back part of the stove where it will cook slowly, until some of the juice is drawn out, then boil until tender. Drain, and chop if liked. To one-half peck of spinach add one tablespoonful butter, one-half teaspoonful salt, and a sprinkle of pepper. Heat again. Garnish with hard-boiled eggs.

Fried Egg-plant.—Cut the egg-plant into slices one-quarter inch thick; salt each slice separately, putting one on top of another; put on the upper slice a heavy weight to press out the juice, and let stand about half an hour. Dip in beaten egg, then in cracker dust or breadcrumbs, or the two mixed; fry quickly in hot lard to a rich brown.

Stuffed Egg-plant.—Cut the egg-plant in two, and scrape out the inside, which put into a saucepan with a little minced ham. Cover with water and boil until soft, then drain off the water and add two tablespoonfuls of grated crumbs, a tablespoonful of butter, half a minced onion, salt and pepper. Stuff each half of the shell with this mixture, to each add a small lump of butter, and bake fifteen minutes. Minced veal or chicken in the place of ham is equally good, and many prefer it.

Stewed Salsify or Oyster-plant.—Scrape the roots and place in cold water, to prevent discoloration. Cut in inch-long pieces. Cover with hot water in a saucepan and boil tender. Then pour off most of the water, and add a cup of milk. Bring this to a boil, stew ten minutes, put in a large lump of butter, cut and rolled in flour; season to taste; boil up once, and serve. This dish has much the taste of stewed oysters.

Asparagus.—Break asparagus stalks in pieces any desired length; boil until tender; season with salt, pepper, and plenty of butter; thicken with a tablespoonful of flour, mixed with milk. If desired, serve on toast. The tops, which are tender, should be placed in the water ten minutes after the other pieces begin to boil.

Asparagus.—Boil a bunch of asparagus twenty minutes, or until tender. Place in a baking dish, add butter, pepper, and salt to taste. Beat well four eggs, add two tablespoonfuls of good cream; pour over the asparagus and bake ten minutes.

Boiled Turnips.—Scrub the turnips and pare off the thick skin. Cut into slices or quarters, and cook in boiling salted water until soft. Then put them into a piece of coarse cheese-cloth and mash fine with a wooden masher, pressing them to remove the water. To one pint of mashed turnips add one tablespoonful butter, one-quarter teaspoonful salt, and a sprinkle of pepper. Serve in hot dish. Potatoes are sometimes mashed with turnips, to absorb the water.

Carrots.—Scrub and scrape off a very thin skin. Cut each carrot into slices from one-quarter to one-half inch thick, and cook in boiling salted water until soft. Serve with a white sauce.

Stewed Carrots.—Wash and scrape the carrots, and cut them into strips. Put these in a stewpan with water enough to cover them, add a spoonful of salt, and boil slowly until they are tender. Then drain and replace them in the pan, with two tablespoonfuls of butter rolled in flour, a little pepper and salt, and enough cream or milk to moisten the whole. Bring to a boil and serve hot.

Parsnips.—Scrub, scrape off a thin skin, cut each parsnip into quarters lengthwise, and cook in boiling salted water, from thirty to forty minutes, until soft. Place in a dish and pour a white sauce over them, or serve with vinegar on the table. They may be buttered after boiling, placed in the oven and baked a golden brown.

Fried Parsnips.—Wash and scrape parsnips, quarter and remove heart, cut in pieces about two inches long, salt and pepper. Mix butter and lard in frying-pan, put them in and fry till a nice brown.

Parsnip Balls.—Wash and boil in water with a little salt, cook till perfectly tender. When cold scrape off the skin, mash them, and for each cup of the mashed parsnips, add one-half cup breadcrumbs and one egg, salt and pepper. Flour the hands and make into balls, brown in hot butter, and serve very hot.

Summer Squash.—When young and tender, this can be fried in the same manner as egg-plant. Winter squash takes much longer to cook, and should be soaked in cold water for two hours or more before cooking. Cold stewed squash can be used by taking two cups of squash, two eggs, two tablespoonfuls of flour, one-half cup of milk, and a small piece of butter. Fry in hot lard.

Stewed Pumpkin.—Cut in two, remove the seeds, slice, and pare. Soak for an hour in cold water, then put in boiling water and stew gently, stirring often. When the pieces grow tender and break, drain and squeeze dry, rub through a colander, and return to the pan with a

TABLE DECORATIONS FOR STATE OR FORMAL OCCASIONS.

When dinners are given in honor of a distinguished guest, or by a select society or anization, elaborate decorations for table and room are prepared. Engraved or neatly nted menus are at each plate. From the ceiling hangs the monogram of the guest or organization giving the dinner.

seasoning of butter, salt and pepper. Stir rapidly from bottom till very hot. Dish in a mound shape.

Vegetable Hash.—Chop up coarsely the vegetables left over from dinner—cabbage, parsnips, potatoes, beans, etc. Sprinkle them with a little pepper. Take a saucepan or frying-pan, oiling its sides and bottom with melted butter; then put in the chopped vegetables, pour in a few spoonfuls of hot water, and cover quickly to keep in the steam. When thoroughly heated, remove the cover and stir the mixture till well cooked. Serve hot.

Milk and Cheese.

Milk should be kept covered with a cloth to prevent it from absorbing impurities from the air. It should be sterilized for babies and young children; especially during warm weather. Vessels used for milk should be kept perfectly clean. Rinse them out after using, fill them with water in which a teaspoonful of borax or washing soda has been dissolved and let them stand an hour. Then wash them in hot soap-suds, scald them, rinse again and let them cool.

Sterilized Milk.—Sterilize milk bottles or jars by boiling them twenty minutes in water. Remove them, fill two-thirds full of milk, and cork with baked or prepared cotton or with rubber corks which have been sterilized. Place the bottles on a wire stand in a kettle of cold water, heat the water gradually to 165 degrees Fahrenheit, and keep it at that temperature forty minutes; then remove the bottles and cool quickly by placing them in cold or iced water. Keep the bottles in a cool place.

A thermometer for testing the temperature may be bought at any pharmacy, but if there is none at hand heat the milk until a scum forms over the top, and keep it as nearly as possible at that temperature for forty minutes. Do not allow it to boil.

Cold Custard or Junket.—Warm one quart new sweet milk, add two tablespoonfuls sugar, and stir until the sugar is dissolved. Pour the mixture into a glass or china dish and add one tablespoonful liquid rennet, and set it in a warm place. If, at the end of an hour, it has not begun to harden, stir in one teaspoonful more of rennet; it should be firm in one or two hours. Remove it to a cool place or set it on ice to cool. It should be eaten within an hour after it has hardened or it will separate into curds and whey. Serve with cream. Cold custard may be flavored with nutmeg grated over the surface, or a teaspoonful of vanilla extract or rosewater stirred in with the rennet.

Cornstarch Blanc Mange.—Scald a pint of milk in a double-boiler. Add one tablespoonful sugar and a sprinkle of salt, with some mashed or preserved strawberries or a little cocoa, mixed with some cold milk. Mix two tablespoonfuls cornstarch with cold milk, stir it into the hot milk, boil and stir five or ten minutes, until it is smooth and thick. Pour the mixture into cold wet cups or molds. Serve cold with cream or milk and sugar.

Toast and Cheese.—Prepare toast; dip in hot, salted water; grate enough dry cheese to cover the slices; set in the oven to melt, and put the slices together as sandwiches. This may be enriched in various ways by adding egg, butter, and spices.

Cheese Pudding.—Butter a baking dish, put in a cup of grated breadcrumbs and a half cup grated cheese in layers, or mix and keep some crumbs for the top. Beat an egg slightly, add a half cup of milk, salt and cayenne pepper; pour in baking dish, add a top layer of crumbs and bake till brown.

Rice and Cheese Pudding.—Pick over and wash a cup of rice. Steam until soft in salted water, in a double-boiler. Butter a baking dish, put in the rice and two cups of grated cheese in layers, pour on one cup of white sauce. Sprinkle over it buttered cracker crumbs and brown in the oven. Macaroni may be used in the same way.

Welsh Rarebit.—Take half pound grated cheese and quarter cupful milk or cream, put into a double-boiler, and stir until the cheese is melted. Beat one egg, and add mustard, salt, and cayenne pepper; then pour the milk and cheese over the mixture. Add a teaspoonful of butter, return to the boiler, and cook until it thickens, stirring constantly. Pour it over dry toast.

Cheese Sticks.—Take one pint flour, one-half pint grated cheese; mix and make paste with lard the size of an egg; make the same as pie crust. Roll out and cut in strips one half inch wide and five inches long; sprinkle over top with grated cheese and bake a light brown.

Cheese Straws.—One cup of grated cheese, one-half cup butter, three-fourths cup of flour, sifted, one small teaspoonful dry mustard, four teaspoonfuls of cold water; mix all together and roll out like pie crust, cut into strips half-inch broad and five inches long. Bake a light brown and serve with salads.

Macaroni With Cheese.—Take twelve sticks of macaroni broken into one inch lengths, and cook in three pints of boiling salted water twenty minutes; turn into a colander and pour over it cold water; drain, make a sauce of one tablespoonful each of butter and flour, and one and one-half cups of hot milk; salt and pepper to taste; put a layer of grated cheese in the bottom of baking dish, then a layer of sauce, then macaroni, and sauce, cover this with fine breadcrumbs; bake until brown.

Sauces and Salads.

Drawn Butter.—Take one and one-half teaspoonfuls flour, make of it a thin paste with cold water, and stir it into a teacupful of hot water. Bring to a boil, and add by degrees two ounces of butter, stirring till well mixed. Boil one minute.

Tomato Sauce.—Heat one tablespoonful of butter; cook in it a teaspoonful chopped onion until golden brown; stir in one tablespoonful flour, and cook till smooth. Add one-half cup water or stock gradually, pour in one cup of strained tomato, add salt and pepper, boil five minutes, and strain. Serve with boiled macaroni, or boiled or baked meat.

White Sauce.—Take two tablespoonfuls each butter and flour. Melt the butter in a saucepan. Stir in the flour and work in the butter until smooth. Cook it, stirring until the flour swells and is smooth. Add one cup scalded milk gradually, and boil, stirring constantly until the mixture thickens. Stir in a seasoning of salt and pepper and serve hot.

Use one tablespoonful flour when making the sauce for macaroni. A brown sauce may be made by browning the butter before the flour is added.

Macaroni Served With White Sauce.—Break macaroni into pieces one or two inches long, and cook in boiling salted water until tender. It will require from thirty minutes to one hour. Drain off the boiling water and pour cold water over the macaroni. Stir the macaroni into the white sauce and heat it. One cup of macaroni is the proportion for the quantity of white sauce in the above recipe. Two tablespoonfuls grated cheese stirred into the white sauce improves it.

Vegetables Served With White Sauce,—Asparagus, tied in bunches and cooked in boiling salted water, carrots, turnips, parsnips and potatoes, boiled and cut in slices or cubes, may be served with white sauce.

Bread, Biscuit and Pastry.

Bread is one of the most important articles of diet. It is made of flour, salt, water, and yeast.

The flour best adapted for bread-making is that from wheat, because it will produce the most appetizing and nutritious loaf at the least cost. The quality of wheat bread depends to a great extent upon the kind of flour used, whether whole-wheat, Graham, or bread flour (as the ordinary flour is called).

The so-called bread flour is made by grinding the wheat, screening out the bran, and sifting the flour through linen or bolting cloth several times, thus making a fine white flour composed chiefly of starch and gluten. The whole-wheat flour differs from this in that the whole grain is ground fine, thus obtaining more gluten and some mineral matter, both of which lie close to the bran.

Graham flour is made from the whole grain ground coarse.

Both the whole-wheat flour and the Graham are dark in color and make dark bread.

Pastry flour contains a very small amount of gluten, and is used for pies and cakes.

There are certain general rules by which good bread flour can be tested.

First. It should have a yellowish tinge.

Second. When pressed in the hand it should fall loosely apart.

Third. When rubbed between the fingers it should feel slightly granular.

In bread-making an indispensible requisite is good yeast; and though modern bread and cake makers avail themselves largely of baking powders, a recipe for satisfactory yeast is of the first importance. The one given below has the warrant of experienced housekeepers.

Excellent Yeast.—Boil two ounces of the best hops in four quarts of water for half an hour; then strain and let stand until lukewarm. Put it in an earthen bowl, add half a cupful each of salt and brown sugar, and a quart of flour; mix all well together, and let it stand forty-eight hours. Now add six medium sized potatoes, which have been boiled and mashed through a colander, and let stand for another day, then strain and bottle and it is fit for use. While making it must be kept near a fire and often stirred. This yeast ferments of itself and needs the aid of no old yeast. If care be taken to let it ferment sufficiently in the bowl, it may immediately be corked tightly. Be careful to keep it in a cool place, and before using shake the bottle briskly. It will keep in a cool place two months, and is best the latter part of the time. Use about the same quantity as of other yeast.

Yeast Cakes.—Boil one quart pared and sliced potatoes and a double handful of hops (tied in a muslin bag) in two quarts of water for nearly an hour. Then take out the hops and strain the remainder through a colander into a bowl. Stir into the hot liquid flour enough to make a stiff batter, beat up well, add two tablespoonfuls of lively yeast, and set to rise in a warm place. When light stir in a cup of Indian meal, roll into a thin sheet, and cut into round cakes. Dry these in a very moderate heat, and when quite dry and cold place them in a cool dry place. For a fair-sized loaf use a cake three inches in diameter, soaking until soft and adding a little soda. These cakes will keep a month in summer, two months in winter.

Wheat Bread.—Take a cup of lukewarm milk, or of water with a teaspoonful of butter, a quarter cake yeast dissolved in a quarter cup of lukewarm water, or a quarter cup of liquid yeast, flour to make a stiff dough (three and quarter to three and half cups) one teaspoonful sugar and one teaspoonful salt.

Scald the milk, add the sugar and salt, and cool it until lukewarm. Dissolve the compressed yeast in the lukewarm water, and add it. Stir in flour to make a dough stiff enough to handle. Scrape the dough out on a floured board, and knead it about fifteen minutes. It should be smooth and elastic, so that when pressed with the finger the dough springs back. Put the dough back into the bowl. Cover with a towel, and set it in a warm place and let the dough rise until double its bulk. Then lay it on a board and knead it again about fifteen minutes, using as little flour as possible. Shape it into biscuit or loaves, lay them in a greased pan, let them rise in a warm place, until double their bulk, and bake on the floor of a hot oven. Biscuit will require from twenty to thirty minutes, and loaves from forty-five minutes to one hour. If the dough is mixed with water, a little butter may be added to prevent the bread from being tough. The butter should be added to the lukewarm water. The quantity of yeast in the recipe will raise the dough to double its bulk in about six hours; one-third of a cake of yeast will raise it in about four hours, and one-eighth of a cake will raise it in about twelve hours. When the bread is baked take it out of the pan and let it stand uncovered, that the air may circulate around it. When it is perfectly cold put it away in a clean, dry tin box. Do not wrap it in cloth, as the cloth absorbs the moisture in the bread and destroys it flavor.

Bread Made with a Sponge.—Use recipe for bread, stirring in only enough flour to make a thick batter. Let the batter rise over night. In the morning add flour to make a stiff dough, and knead or beat it until it is smooth. Mold it lightly into loaves or biscuits. Let them rise until

double their bulk, and bake. A potato may be mashed and stirred into the batter before it is set away to rise.

Graham Bread.—Take one teacupful of wheat flour, a half teacupful each of molasses and of good yeast, a teaspoonful of salt, and a pint of warm water. Mix these and add sufficient Graham flour to make the dough as stiff as can be stirred with a strong spoon. Set this over night, and in the morning add one teaspoonful of soda, dissolved in a little water. Mix well, and pour into two medium-sized pans, which should be about half full. Let stand in a warm place until the dough rises to the top of the pans, then bake one hour in a fairly hot oven.

The loaves should be covered when first put into the oven with a thick brown paper, or an old tin cover; this prevents the upper crust hardening before the loaf is well risen. If these directions are correctly followed the bread will not be heavy or sodden.

Graham Bread.—Mix the sponge or batter, using a pint of lukewarm water, half a teaspoonful salt, half yeast cake and one cup flour. When light, stir in three tablespoonfuls molasses and beat until it is thoroughly mixed; then add enough Graham flour to make a soft dough. Knead it ten minutes, shape it into two loaves, and put it in greased pans to rise. When light, bake in a moderate oven about thirty minutes. The bread may be made without any white flour.

Entire Wheat or Whole Wheat Bread.—Use recipe for Graham bread substituting whole wheat flour for the Graham.

Soft Graham Bread.—Mix together two cupfuls Graham flour, one cupful white flour, one teaspoonful salt, four tablespoonfuls molasses, one tablespoonful butter or lard and lukewarm water to make a soft dough, add half a yeast cake dissolved in half a cupful of lukewarm water. Beat thoroughly and allow it to double its bulk. Beat again, and pour into greased pans. Let it double its bulk. Bake in moderate oven.

Boston Brown Bread.—Mix together thoroughly two cupfuls of rye meal or Graham flour, one cupful corn meal, one-half teaspoonful salt, and one-quarter teaspoonful soda. Add two cupfuls of milk and one-half cup molasses. Fill a greased mold two-thirds full, cover it and steam six hours or longer. The longer it is steamed the darker and richer it becomes.

Boston Brown Bread.—Mix one pint of rye flour, one quart of corn-meal, one teacupful of Graham flour, half a teacupful of molasses or brown sugar, a teaspoonful of salt, and two-thirds of a teacupful of yeast. Stir this with a spoon into as stiff a dough as you can, using warm water for wetting. Let it rise several hours, or over night. In the morning, or when light, add a teaspoonful of soda dissolved in a spoonful of warm water; beat well and turn into well-greased deep pans, and let it rise again. Bake in a moderate oven from three to four hours.

Boston Brown Bread (Unfermented).—Stir thoroughly together, wetting with sour milk, one cupful of rye flour, two cupfuls of corn meal, one cupful of white flour, half a teacupful of molasses or sugar, and a teaspoonful of salt. Then add a level teaspoonful of soda dissolved in a tablespoonful of water. Sweet milk may be used by substituting baking-powder for soda. The batter must be stirred thick with a spoon, and turned into well-greased pans.

Virginia Brown Bread.—Take a pint of corn-meal, and thoroughly scald with boiling water. To this, when cool, add a pint of light, white bread sponge, mix well, and add a cupful of molasses, and Graham flour sufficient to mold. When light bake for an hour and a half in a moderate oven. The quantities here given will make two loaves.

Boston Corn Bread.—Take one cupful of sweet and two of sour milk, two-thirds cupful of molasses, a cupful of wheat flour, four cupfuls corn-meal, and a teaspoonful of soda. Steam for three hours and brown in the oven a few minutes. If made with sweet milk and baking-powder it is equally good.

Corn Bread.—Beat thoroughly two eggs—whites and yolks separately. Mix two heaping cupfuls of Indian meal and one cupful of flour, adding a teaspoonful of melted lard and milk enough to make a thin batter. Put into the flour while yet dry a teaspoonful

Chicken and Sweetbread Croquettes

PRACTICAL DIRECTIONS

Add to a sweetbread cooked, cooled and chopped, not too fine—enough chopped chicken to make one pint in all. Melt one-fourth a cup of butter, add half a cup of flour and cook until frothy; then add gradually, stirring constantly, one cup of chicken stock, well seasoned with vegetables and sweet herbs, and one-third a cup of cream. Season to taste with salt and pepper; add one egg, well beaten, and the chopped meat. Set aside to become cold, then shape, apply egg-and-bread crumbs, and fry in deep fat; drain on soft paper. Serve with mushroom sauce in a boat.

of soda and two of cream-of-tartar. Put in the eggs last. Beat very briskly. Bake quickly in a buttered mold; a half hour is usually time enough. All kinds of corn bread should be eaten while hot.

Corn Pone.—To one quart of corn meal mush, add one and one-half pints cold water; stir well and add corn meal to make soft batter. Let stand over night in a warm place. In the morning add one cupful buttermilk, a level teaspoonful soda, one egg beaten light, one tablespoonful salt, three-fourths cupful sugar, two tablespoonfuls flour. Add enough meal to make it about as stiff as common corn bread and bake one hour and a quarter in a moderate oven.

Johnnie Cake.—Sift into a pan one quart of Indian meal, and, making a hole in the middle, pour in a pint of warm water, and add a teaspoonful of salt. Mix the meal and water with a spoon into a soft dough; then stir very briskly for a quarter of an hour or more, till it becomes light and spongy. The dough must next be spread evenly on a straight, flat board, and the board be placed nearly upright before an open fire, with some support to hold it in position. Bake well; when done, cut into squares; send hot to table, split and buttered.

New England Corn Cake.—Take a quart of milk, a pint of corn meal, a teacupful of wheat flour, a teaspoonful of salt, and two tablespoonfuls of melted butter. Scald the milk, and pour it gradually on the meal. When cool, add the butter and salt, and half a cupful of yeast. Let set over night. In the morning beat the sponge thoroughly, and add two well-beaten eggs, and half a teaspoonful of soda dissolved in a teaspoonful of water. Pour into buttered deep earthen plates, let stand fifteen minutes to rise again, and bake from twenty to thirty minutes.

Corn Meal Griddle Cakes.—Scald two cupfuls of sifted corn meal and mix with a cupful of wheat flour and a teaspoonful of salt. Add three well-beaten eggs; thin with enough sour milk to make the mixture the right consistency. Beat the mass till very light, and add a teaspoonful of baking-soda dissolved in a little water. If you use sweet milk, replace the soda with two large teaspoonfuls of baking powder.

Lunch Biscuit.—To enough raised dough to make a loaf, add one-half cupful sugar, one-half cupful lard, and mix thoroughly. Roll to one-fourth inch thickness and cut with biscuit cutter, place them in pan one on top of the other, with piece of butter the size of a pea between them. Let raise and bake.

Rusk.—Two teacupfuls raised dough, one teacupful sugar, half cupful butter, two well-beaten eggs, flour enough to make a stiff dough; set to raise, and, when light, mold into high biscuit and let raise again, sift sugar over top and wet with milk, place in oven.

Parker House Rolls.—Scald a pint of milk, melt in it while warm a piece of butter the size of an egg, add a tablespoonful of sugar, a pinch of salt, and a cupful of yeast. Add flour to make soft dough and let it rise over night.

In the morning add half a teaspoonful of soda dissolved in a spoonful of water. Mix in enough flour to make the same stiffness as any biscuit dough, and roll out about a quarter of an inch thick. Cut with a large round cutter, spread soft butter over the tops, and fold one-half over the other by doubling. Cover, and place near the fire for fifteen or twenty minutes to rise before baking. Bake in rather a quick oven.

French Rolls.—These may be made of the bread dough prepared for baking. When making bread, reserve enough dough for rolls. Work into this a tablespoonful of lard or butter, and stand in a cool place for four hours. Knead again, and let stand three hours more. Then roll, very lightly, pieces of the dough into round cakes, and fold these over, not quite in the centre. Let rise again an hour, and bake half an hour in a hot oven.

Risen Biscuit.—Mix one quart milk, three-quarters of a cupful each lard or butter and yeast, two tablespoonfuls white sugar, and a teaspoonful of salt, with flour enough to make a soft dough. Set over night. In morning roll out into a sheet three-quarters of an inch thick. Cut into round cakes, set close together in a pan, let rise twenty minutes, and bake twenty minutes. Or half

the flour may be worked in, and the remainder five hours later, the dough being left to rise five hours more.

Gluten Bread.—Scald a pint of milk; when lukewarm, add the whites of two eggs slightly beaten, and one yeast cake dissolved in two tablespoonfuls of warm water; add sufficient gluten flour to make a thick batter. Beat for five minutes; cover, and stand aside for three hours; then add sufficient flour to make as thick a batter as you can handle with a spoon. Turn it into a greased square pan, and when it is very light (about one hour) bake in a moderately quick oven for three-quarters of an hour.

Gluten Muffins.—Separate two eggs; beat the yolks; add a pint of milk. Add to this a half pint of gluten flour, a half teaspoonful of salt. When thoroughly mixed, add a rounding teaspoonful of baking powder; stir in the well-beaten whites of the eggs. Bake in greased hot gem pans in a moderate oven twenty minutes.

Sally Lunn.—Warm one-half cupful of butter in a pint of milk; add a teaspoonful of salt, a tablespoonful of sugar, and two quarts of flour. Beat thoroughly, and while the mixture is warm, add four well-beaten eggs, and, lastly, four tablespoonfuls of yeast, which beat in well. Set it to rise over night in a buttered dish. In the morning, dissolve half a teaspoonful of soda, stir it into the batter, and set it to rise again about fifteen or twenty minutes. Bake steadily three-quarters of an hour, or until a straw thrust in comes out clean.

This cake should be torn apart, not cut. Cutting is apt to make warm bread heavy. Bake a light brown. Eat while hot.

English Crumpets.—To a quart of warm milk, add half a cup of yeast, a teaspoonful of salt, and flour enough to make a stiff batter. When light, rub in half a cupful of melted butter, a teaspoonful of soda dissolved in a little water, and a very little more flour. Let stand twenty minutes or until light. Next grease some muffin rings, place them on a hot griddle, and fill them half full of the batter. When done on one side, turn and bake the other side. Butter them while hot, pile one on another, and serve at once.

Rice Cakes.—Take one cup cold boiled rice, one pint flour, two well-beaten eggs, a teaspoonful salt, and milk to make a moderately thick batter. Beat well together and bake quickly.

Flannel Cakes.—A quart of milk, a tablespoonful of butter, two well-beaten eggs, a teaspoonful of salt, and three tablespoonfuls of yeast, with flour enough to make a good batter. Set at night as a sponge, and add the butter and eggs in the morning.

Buns.—Break one egg into a cup and fill with sweet milk; mix with it half cupful yeast, half cupful butter, one cupful sugar, enough flour to make a soft dough; flavor with nutmeg. Let rise till very light, then mold into biscuits; let raise a second time in pan, bake, and, when nearly done, glaze with cream and sugar.

Coffee Cakes.—To one quart light dough add one cupful sugar, one-half cupful butter, one cupful raisins, and season with cinnamon or nutmeg to taste; let raise, then roll out in large round cakes; set the other half away in a can in a cool place until you wish to bake again.

Biscuit.—One quart flour, one teaspoonful salt, one of soda, sift together and rub in one tablespoonful of lard, sour milk to make a soft dough, bake immediately in a quick oven. If milk is not very sour use less soda.

Tea Biscuit.—Sift together one quart of flour and three teaspoonfuls baking powder, rub in a tablespoonful lard, one-half teaspoonful salt. Mix with enough sweet milk or water to make as soft a dough as can be handled. Roll and cut out biscuit.

Soda Biscuit.—Rub into a quart of sifted flour two tablespoonfuls lard, one teaspoonful salt, one scant teaspoonful soda, two of cream of tartar. Mix with one pint milk, or enough to make a very soft dough. Roll and cut one-half to one inch thick with biscuit cutter; bake in quick oven.

Graham Muffins.—Mix together thoroughly one and one-quarter cupfuls Graham flour, one cupful white flour, scant teaspoonful soda, and a teaspoonful salt. Add

one-third cupful of molasses and one cupful sour milk. Bake in greased gem pans.

Muffins.—One cupful milk, one-half teaspoonful each of butter and lard melted, a little salt, three teaspoonfuls baking powder, flour to make batter like cake. Bake in quick oven.

Corn Meal Muffins.—Two eggs, two tablespoonfuls granulated sugar, one cupful sweet milk, one cupful of granulated corn meal, one and one-half cupfuls sifted flour, three teaspoonfuls baking powder, and a pinch of salt.

Wheat Muffins.—One pint sour milk, one-fourth teaspoonful soda, one and one-half teaspoonfuls baking powder, one-half teaspoonful salt, one teaspoonful sugar, one tablespoonful butter, one beaten egg, flour enough to make stiff as cake batter. Grease muffin tins; fill half full, and bake in a quick oven. Sweet milk without the soda may be used. Add an extra teaspoonful of baking powder.

Breakfast Gems.—One heaping pint flour, one teaspoonful baking powder, one teaspoonful salt, butter half size of an egg, one teacupful water. Bake fifteen minutes.

Graham Gems.—One cupful sour milk, one-half teaspoonful soda, one tablespoonful sugar, pinch of salt; add Graham flour to make stiff batter. Drop in greased gem pans and bake quickly. This amount makes eight gems.

Waffles.—Mix one quart each milk and flour, five tablespoonfuls yeast, and a teaspoonful of salt. Set this over night as a sponge. In the morning add two eggs and a tablespoonful of melted butter, and bake in waffle-irons.

Rice and Corn Meal Waffles.—Mix a cupful cold-boiled rice, half cupful each flour and corn meal, two well-beaten eggs and milk to make soft batter. Add a tablespoonful melted butter, one and one-half teaspoonfuls baking powder, and a teaspoonful of salt. Beat smooth and bake in waffle-irons, greasing your irons.

Griddle Cakes.

Take one cupful flour, two teaspoonfuls baking powder, and a sprinkle of salt. Sift the dry ingredients together into a bowl. Beat an egg, add a scant cupful of milk, and stir in gradually the dry ingredients, to make a smooth batter. Place an iron or soapstone griddle over the fire and grease it with a little dripping. When the fat begins to smoke, dip out the batter with a tablespoon or ladle and pour it on the griddle to form cakes. When the cakes are full of bubbles, turn them so that both sides may be brown. Serve on hot plates, with syrup, or butter and sugar, or place them in layers, with butter, sugar and cinnamon between.

The cakes may be varied by adding half-cupful of cold boiled rice, hominy, wheatena, oatmeal or canned corn, to the ingredients called for. By using a half cupful of corn meal, rye, Graham flour or bread crumbs, instead of the flour called for in the recipe, various kinds of griddle cakes may be made.

Buckwheat Cakes.—Take a quart of buckwheat flour, a teaspoonful of salt, a handful of Indian meal, two tablespoonfuls of molasses. Add four tablespoonfuls of yeast and enough warm water to make a thin batter. Beat well and set to rise in a warm place. Let rise till morning and bake quickly on a hot iron.

Breakfast Cakes.—Take one quart bread crumbs; pour enough boiling water over to soak them. Add quart buttermilk, three eggs, one-half teaspoonful salt, tablespoonful of lard, teaspoonful soda. Stir well and thicken with flour to the right thickness for griddle cakes.

Fritter Batter.—Beat the yolk and the white of one egg separately. To the yolk add a tablespoonful of butter and a little salt, and two tablespoonfuls water or milk, and stir in flour to make a smooth dough. Add as much more of the liquid gradually to make a batter, and beat in the stiff white of the egg. Fry in deep, hot fat. The fritters may be served with syrup, with sugar and cinnamon, or with a pudding sauce.

To make apple fritters, add one tablespoonful of sugar to the batter. Cut apples into slices, dip in the batter and fry them. Sprinkle them with sugar and cinnamon before serving. Oysters and clams may be dipped in the fritter batter for frying.

Cereals.

In cooking cereals use plenty of water. Be careful to cook cereals thoroughly. Cereals should be cooked in a double boiler, to prevent scorching.

Avena or Rolled Oats.—Put one and one-half cups of boiling salted water into the top of a double boiler. Remove any black specks found in the oatmeal, and stir one-half cup of the meal into the water. Cover and cook from thirty minutes to one hour. Serve with milk or cream and sugar. Baked or steamed apples and other fruits are sometimes served with oatmeal.

Scotch Oatmeal.—Pick over a cup of coarse oatmeal and put it, with one teaspoonful salt and five cups boiling water, into a two-quart covered boiler or pail. Set it on a stand in large kettle of boiling water and let it boil slowly all day or all night. This makes a jelly-like mass with a rich flavor. Do not stir, as stirring makes it ropy.

Wheatlet.—Pick over the wheat. Put it, with salt and six cups boiling water, into the top of a double boiler. It may cook from thirty minutes to two hours.

Cornmeal Mush.—Add salt to a cup of cornmeal and mix one cup cold water gradually to make a smooth paste. Pour it into a pint of boiling water and cook in a double boiler from three to five hours. Serve with milk or cream.

Cold mush may be cut in slices one-half inch thick and fried a delicate brown. Serve with syrup.

Rice.—Take one-half cup of rice and pick out the specks. Wash and rub it with the hands in two or three waters to make it white. Then dry it in a clean cloth. Put it, with one and one-quarter cups boiling water and salt, into the top of a double boiler and cook from thirty minutes to one hour, until perfectly soft. If it becomes dry in cooking, add one tablespoonful hot water occasionally. A few raisins, seeded and cut into small pieces, may be cooked with the rice to flavor it. If the rice is cooked in milk instead of water, one and one-half cups hot milk to one-half cup rice will be a good proportion. When the rice is done, press it into small cups, let it cool two or three minutes, and turn the shapes out on a pretty dish. Serve hot with sugar and milk.

Boiled Hominy.—Soak over night; put in pot with two quarts water to a quart of hominy; boil slowly for three hours, or till soft. Drain in a colander, and stir in butter, pepper, and salt. There are two grades of hominy, the large and the small grained. The latter may be boiled till as thick as mush, and eaten as a breakfast dish with sugar and cream.

Fried Hominy.—Cut into slices cold boiled hominy, and fry in hot lard, or moisten with milk to a soft paste; add melted butter, and a beaten egg, and form into round cakes. Dredge with flour and fry a light brown.

Cakes and Cake-Making.

General Directions for Making Cakes.—For cakes which contain butter, cream the butter, warm slightly if hard, add sugar gradually, and beat. When smooth add the yolks of eggs or whole eggs (beaten light) and the milk. Then sift in the flour, which has been mixed with the baking powder and spices. When the yolks and whites are beaten separately, the whites are usually added last.

A cake can be made fine-grained by long beating; light and delicate with a small amount of beating. Never stir cake after the final beating. For cakes which do not contain butter, separate the whites and yolks of eggs. Beat the yolks until thick, add sugar gradually, and continue beating; add flavoring. Beat whites until stiff and dry and add to mixture.

Sift the flour with the salt and cut and fold in lightly at the last. Do not beat mixture after flour is added, if baking powder is not used.

Light Cake.—Cream one cup of butter, and work in gradually one and one-half cups of sugar. Separate three eggs, beat the yolks, pour in one-half cup of milk, and add to the creamed butter. Sift with three cups of flour two teaspoonfuls baking powder and add to mixture. Beat well to make a smooth batter. Beat the whites until stiff and fold lightly into the batter. One cup

Steamed Plum Pudding

PRACTICAL DIRECTIONS

Mix thoroughly together half-a-pound of fine chopped suet, half-a-pound of bread crumbs, two ounces (half a cup) of flour, a teaspoonful of cinnamon and one-fourth a teaspoonful, each, of mace and clove, three fourths a cup of sugar, three-fourths a pound of mixed fruit,—seeded raisins, orange peel, citron of figs, and a teaspoonful of salt; beat four eggs, add two or three tablespoonfuls of milk and stir into the dry ingredients. If the mixture is not moist enough, add more milk. The mixture should be much too soft to handle, but of such consistence that it can be taken up in heaped spoonfuls. Steam in a buttered mold about five hours. As the water evaporates, replenish with boiling water. Serve hot with a hard or a liquid pudding sauce.

currants or nuts, well flavored, may be added. Bake in round, shallow pans; put the cakes together with jelly between.

Sponge Cake.—Three eggs, one and one-half cups flour, one and one-half cups sugar, two teaspoonfuls baking powder, two teaspoonfuls vanilla or lemon, one-half cup boiling water. Beat the whites and yolks separately until light, then put together and beat again, sift in sugar, a little at a time, add flavoring, flour and baking powder, beat all together, last stir in hot water, bake in two layers, and ice.

Pound Cake.—Take one pound each of flour, sugar, and eggs, three-quarters pound of butter, one nutmeg, one teaspoonful of mace. Cream half the flour with the butter, add spice. Beat the yolks of the eggs and add the sugar, then add the beaten whites and the remaining flour. When this is done mix all thoroughly, beating for half an hour. This, if properly baked, makes an excellent cake.

Gold Cake.—Take one-half pound of pulverized sugar, one-quarter pound of butter, one half pound of flour, one-half cup of milk, the yolks of six eggs, a half teaspoonful of soda and one of cream of tartar, and the rind of one lemon. Mix thoroughly.

Silver Cake.—Take same materials as above, except that the whites, instead of the yolks, of six eggs are used. Mix the soda and cream of tartar with the flour. Flavor with oil of bitter almonds instead of lemon rind. Bake gold and silver cake in tins of same size, and lay in alternate slices in the cake basket.

Angel Food Cake.—Whites of eleven eggs, one and one-eighth cups of sifted granulated sugar, one cup sifted flour, one teaspoonful vanilla, or almond flavoring, one teaspoonful of cream tartar, sift flour and cream tartar together several times; beat eggs to a stiff froth on a platter, add the sugar lightly, then the flour gently, then the flavoring. Do not stop a moment before putting it in pan. Bake in a moderate oven forty minutes. Do not grease pan, but put several layers of paper in the bottom. When done invert pan and do not take out until cool. Use plain white icing.

Lemon Cake.—Two cups sugar, one cup butter, one cup sweet milk, three cups flour, whites of four eggs, one lemon, grated rind and juice, three teaspoonfuls baking powder; beat the eggs to a stiff froth and add after the batter has been mixed; bake in jelly pans, put icing between.

Lemon Jelly Cake.—One and one-half cups sugar, one-half cup butter, beat to a cream, one-half cup milk, two and one-half cups flour, two teaspoonfuls baking powder, three eggs, well beaten, bake in layers. Jelly: One cup sugar, one egg, the juice and grated rind of one lemon, one tablespoonful water, one teaspoonful flour, place dish in a pan of boiling water and let thicken, when cool spread between layers.

Mountain Cake.—Two cups sugar, one-half cup butter, two eggs beaten together until light, three cups flour, one cup sweet milk, two teaspoonfuls baking powder, bake in layers. Icing: White of one egg, beaten stiff, seven teaspoonfuls pulverized sugar.

White Mountian Cake.—One cup sugar, one-half cup butter, one-half cup sweet milk, one-half cup corn starch, one cup flour, whites of six eggs, half teaspoonful vanilla, two teaspoonfuls baking powder. Bake in layers. Icing: Whites of two eggs, twenty teaspoonfuls sifted sugar, beaten very light, half teaspoonful vanilla. Spread between layers on the outside.

Chocolate Cake.—One-fourth cake of chocolate, one-fourth cup sweet milk, one-half cup sugar; cook this together, and when hot add the beaten yolks of two eggs. Flavor with vanilla, and set aside to cool. Take one egg, one-half cup sugar, one-half cup butter, one-half cup sweet milk, one and a half cups flour, one-half teaspoonful soda dissolved in the milk; when the other mixture is cool stir the two together. Bake in layers, and put cooked icing between.

Marble Chocolate Cake.—Two cups sugar, three fourths cup butter, three cups flour, one cup milk, four well-beaten eggs, two teaspoonfuls baking powder. Take one cup of this batter and mix with four tablespoonfuls of chocolate, dissolved in a little cream. Cover the bottom of the pan with white batter, and drop a spoonful of the

chocolate mixture upon it in places, which will form rings; then another layer of white and dark until all is used. Bake in a moderate oven.

Cocoanut Cake.—Two cups sifted granulated sugar, three-fourths cup butter, beaten to a cream, one cup sweet milk, whites of seven eggs, two heaping cups flour, one and one-half teaspoonfuls baking powder, one cup corn starch. Filling: Two cups sugar, one-half cup cold water. Boil together and stir into the well-beaten whites of the eggs. Beat until cold, then spread on each layer, and sprinkle each with grated cocoanut.

Cream Cake.—One cup sugar, one and one-half cups flour, two teaspoonfuls baking powder. Beat two eggs until very light, put in cup and fill up with cream. Bake in layers in a quick oven. Filling: One-half cup sugar, one egg, one tablespoonful flour, one pint milk, small tablespoonful butter. Boil gently for a few minutes, flavor after removing from the stove.

Ice Cream Cake.—One cup butter, beaten to a cream, two cups pulverized sugar. Mix sugar and butter and beat until light, add one cup sweet milk, three full cups flour, and three teaspoonfuls baking powder; lastly add the whites of eight eggs, well beaten. Bake in layers.

Almond Cake.—Whites of five eggs, two coffee-cups "A" sugar, one cup sweet milk, two-thirds cup of butter, three cups flour, two teaspoonfuls baking powder, one teaspoonful lemon extract. Cream, butter and sugar together, add milk, flour, well-beaten whites of eggs, then the baking powder. Bake in three layers. Filling: White of one egg beaten stiff, one cup of sugar, one-fourth cup water. Boil water and sugar until it is brittle, when drop in cold water. Pour over the egg and beat well, add one-half pound of blanched and chopped almonds, flavored if desired. Then spread between layers.

Fruit Cake.—Four eggs, one cup sugar, two cups molasses, one and one-half cups butter, one-half cup milk, one teaspoonful soda, one pound of raisins, one pound of currants, one-half pound of citron, sliced fine, one teaspoonful cinnamon, one nutmeg, one teaspoonful cloves, five cups flour. Bake two and one-half hours, in a slow oven.

Fruit Cake.—One pound sugar, one pound butter, one pound flour, ten eggs, one pound raisins, one-half pound currants, one-fourth pound citron, one nutmeg, one tablespoonful cinnamon, one tablespoonful ginger and allspice mixed, one tablespoonful vinegar, one teaspoonful soda. Bake slowly.

Boiled Frosting.—Take one cup granulated sugar, one-half cup water, one-eighth teaspoonful cream of tartar, mix together and cook without stirring until the liquid, when dropped from a spoon, will thread. Beat the whites of two eggs. Remove the mixture from the fire, and when cool pour it slowly upon the whites of eggs, beating all the while. Continue beating until the mixture is a thick, creamy mass; then spread it over the cake.

Egg Frosting.—Beat the white of an egg until light. Then beat into it, gradually, enough powdered sugar to make a soft dough. Add one-quarter teaspoonful lemon extract, or one teaspoonful lemon or orange juice, or one-quarter teaspoonful vanilla, and spread it on the cake.

One tablespoonful melted chocolate, or one tablespoonful desiccated cocoanut may be mixed with it. The yolk of the egg may be used instead of the white to make Sunshine Frosting.

Plain Frosting.—Mix one cup sugar and a tablespoonful lemon or orange juice; stir in enough boiling milk or water to make a soft dough. Spread it over the cake. This may be varied by adding different ingredients as in the preceding recipes.

Chocolate Filling.—Beat together the yolks of two eggs, one-half cup cream, one-half cup sugar, two sections of a cake of chocolate; put in saucepan and boil until thick enough to spread.

Cream Filling.—One pint of sweet cream beaten until it looks like ice-cream; add one cup sugar, flavor with vanilla; blanch and chop one pound of almonds, stir in cream and spread very thick between layers.

Soft Gingerbread.—One-half cup of lard, one cup each of milk and sugar, two

of molasses, one teaspoonful soda, two tablespoonfuls cinnamon, and one of ginger. Stir butter, sugar, molasses and spice together, add the milk and soda, and, lastly, about five cups of flour. Beat hard, and bake into a loaf, or in small tins. Some seeded raisins will improve. Add these last.

Ginger Crackers.—Take one pint molasses, one cup of shortening, and one of sugar, with ginger and cinnamon to taste. Add flour enough to make a soft dough. Roll very thin, cut into small cakes, and bake in a quick oven. For plain cookies use only one-half cup shortening.

Ginger Snaps.—One cup each of sugar, molasses and lard, one egg, one tablespoonful ginger, one tablespoonful vinegar, dissolving in the vinegar one teaspoonful soda. Use no milk or water. Mix in seven cups flour and knead. Roll out in any shape desired and bake in quick oven.

Risen Doughnuts.—Take a pint of boiling milk, two cups of sugar, one-half cup of butter, a half pint of yeast, and two eggs. Beat together the eggs, butter and sugar, and then pour in the milk. Let it rise three times, the last rising after they are cut out. Fry in smoking-hot lard. Sift with powdered sugar while hot.

Crullers.—Cream one tablespoonful of butter, work in a teaspoonful of cinnamon, beat the yolks and whites of two eggs separately, then together, and stir into the batter. Sift two-thirds cup sugar and one teaspoonful baking powder with two cups flour, add to the eggs and butter, mix well, and stir in gradually one-quarter to one-half cup milk. Roll out, cut in rounds, with a small round out of the centre of each; fry in deep, hot fat, turning as the sides are browned. Lift from the fat with a wire frying-spoon, and lay on brown paper to drain.

Jumbles.—Mix one pound each flour and granulated sugar and one grated nutmeg. Put in one pound butter, and stir in two beaten eggs. Sift granulated sugar on a board, lay the dough on it, roll out one-third inch thick, cut out with a round cutter, and cut out a circle in the centre. Bake in a buttered pan, in a moderately hot oven, from ten to twenty minutes.

Cocoanut Jumbles.—Grate one cocoanut. Rub one-half pound butter and sifted sugar together. Mix with one pound of sifted flour and three well-beaten eggs, with a little rose water. Mix the cocoanut gradually, so as to make a stiff dough. Bake in a quick oven, placing the batter in small particles in tin pans, or on greased paper.

Sugar Cookies.—Cream one cup sugar and one-half cup butter, beat one egg and add it with one-quarter cup milk. Sift in one teaspoonful baking powder with one cup of flour. Flavor with one-quarter teaspoonful lemon or vanilla. Stir in more flour to make a dough stiff enough to handle. Roll out on a floured board until one-quarter inch thick. Bake from ten to fifteen minutes.

Lemon Crackers.—Two and one-half cups soft sugar, one cup lard, one pint sweet milk, two eggs, five cents' worth baking ammonia, two cents' worth lemon oil. Dissolve ammonia in the milk, or in a little hot water, make dough as stiff as for pies, and roll very thin, cut with square cake cutter, prick with fork, and bake in hot oven.

Cracknells.—To one pint rich milk add two ounces butter and one tablespoonful yeast, make it warm, and mix enough flour to make a light dough. Roll thin and cut in any shape desired, prick well with fork, and bake in slow oven, allowing to rise as they bake.

Chocolate Drops.—One-half cake grated chocolate, one pound sugar, four eggs, one lemon, one tablespoonful baking powder, one tablespoonful cinnamon, flour enough to roll, cut out, place on greased pan and bake.

Swiss Puffs.—Two eggs, beat light, a pinch of salt in flour enough to make stiff dough, take out small bits, roll very thin and cut in strips, twist and join the ends together. Fry in hot lard, lift with fork, and let drain. Sprinkle with pulverized sugar.

Cream Puffs.—Melt one-half cup butter in one cup boiling water, stir in one cup flour, take off stove and beat thoroughly and let it cool. Stir in three eggs, one at a time without beating, mix thoroughly and drop a heaping teaspoonful in greased pans, two or three inches apart, and bake in a moderate

oven twenty-five or thirty minutes, or until done; if not done they will fall. When cold cut open near the top and fill with custard cream. Cream: — Two-thirds pint sweet milk, four tablespoonfuls sugar, one egg, two tablespoonfuls flour, wet in a little milk. Mix all together and boil until it thickens, add one teaspoonful vanilla, and let cool a little, then fill puffs.

Hickorynut Snaps.—Three cups chopped nuts, one pound sugar, one teaspoonful cinnamon, three eggs, one tablespoonful baking powder, two cups flour. Mix well, drop from teaspoon on greased pan, and bake a light brown.

Tea Cake.—Two well-beaten eggs, two cups sugar, two-thirds cup butter, one teaspoonful flavoring, five pints flour, with two heaping teaspoonfuls baking powder, mixed into it. Mix thoroughly and add one-half cup sweet milk, or one cup sour cream, beaten to a foam with soda. Take upon the bread board and mix stiff. Bake in hot oven.

Custards and Creams.

Cup Custard.—Scald one pint milk. Beat two eggs, add the milk, sprinkle of salt and two tablespoonfuls sugar, and stir until the sugar dissolves. If desired, a little nutmeg may be added. Pour into cups, stand the cups in a pan of boiling water, put the pan in the oven and bake until the custards are firm in the centre.

To make a bread-and-butter pudding, pour the custard into a pudding-dish and place buttered slices of bread on top of the custard. Stand the pudding-dish in a pan of boiling water and bake in the oven.

To test baked custard. Put a knife in the centre; if it comes out without egg or milk on it the custard is cooked. Overcooking will curdle it.

Steamed Custard. — Scald one pint milk. Mix one teaspoonful cocoa with a little cold milk and stir into the hot milk. Boil one minute. Separate two eggs, keeping the whites in a cool place. Beat the two yolks and one whole egg together, add salt and three tablespoonfuls sugar, and stir into the hot milk. If liquid flavoring, instead of cocoa, is used, add it last, and pour the mixture into a pudding-dish or into cups. Set it into a pan of hot water or into a steamer over a kettle of boiling water until the custard is solid. Just before meal time beat the two whites of eggs stiff, add half tablespoonful sugar and half tablespoonful red jelly or jam, and drop by spoonfuls on the custard for a meringue or float.

Snow Custard.—Take one quart of milk, sweeten and flavor with lemon and vanilla. Bring the milk to a boil, and lay on top the whites of five eggs beaten to a froth. When the whites have cooked slightly, remove and lay on a dish. Then add the boiling milk to the beaten yolks, stirring constantly, and put on the fire until near boiling. Then remove it, and lay the whites carefully on top.

Floating Island.—Scald one pint milk. Separate three eggs. Add salt and two tablespoonfuls sugar to the yolk and beat. Beat the whites until very stiff, add one teaspoonful powdered sugar to them, beat slightly, and drop spoonfuls of the stiff whites on top of the scalded milk. Let them cook two or three minutes, until firm, lift out on a plate, and pour the scalded milk on the beaten yolks. Put this mixture into a double boiler, and stir until it thickens. Pour it into a china or glass dish. When nearly cool, stir in the flavoring, put the whites on the top, and serve cold, as a pudding. A pretty way to serve it is to put specks of jelly on the tops of the whites.

To make cocoanut or chocolate custard, cook two tablespoonfuls cocoanut or one-half tablespoonful melted chocolate in the scalded milk.

Tapioca Custard.—Soak three heaping teaspoonfuls of tapioca over night. Place over fire one quart milk, let come to a boil, then stir in tapioca, pinch of salt; one cup sugar and beaten yolks of three eggs. Stir quickly and place in dish. Place on top the whites of three eggs well beaten. Set on ice.

Small Custard.—Beat one egg, one heaping teaspoonful sugar; one-half pint milk. Put in cup, set in vessel of boiling water and bake.

Baked Custard. — Four well-beaten eggs, one-half cup of sugar, one and one-half pints milk; flavor with nutmeg. Bake from three-quarters of an hour to an hour, according to temperature of oven. If baked too long it will be watery. As soon as it solid clear through it is done. Set baking-dish in a pan of water while baking.

Peach Cream.—To one quart of ripe peaches, peeled and rubbed through sieve, add whites of two eggs, one cup granulated sugar. Beat together until a stiff cream is formed. Serve cold.

Banana Cream.—After peeling the bananas, mash fine with a spoon, then allow equal parts of bananas and sweet cream. To one quart of the mixture add one-fourth pound sugar. Beat all together until the cream is light.

Spanish Cream.—Scald three cups milk with one-quarter box gelatine, add one-half cup sugar, and pour on yolks of three eggs slightly beaten. Cook until thick, stirring constantly; remove from heat, add salt, one teaspoonful vanilla, and whites of eggs beaten stiff. Pour into mold wet with cold water.

Apple Snow.—Peel and grate one large sour apple, sprinkling over it a small cup of powdered sugar as you grate it, to keep it from turning dark; break into this the whites of two eggs, and beat it all constantly for half an hour; take care to have it in a large vessel, as it beats up very stiff and light; heap in a glass dish and pour a fine, smooth custard around it and serve. A very delicate dessert.

Raspberry Float.—Crush one pint ripe red raspberries with gill of sugar. Beat whites of four eggs to stiff froth and add gradually a gill of powdered sugar. Press raspberries through fine strainer to remove seeds, and by degrees beat in juice, egg and sugar until so stiff that it will stand in pyramids.

Lemon Jelly.—Take one ounce gelatine, cover with one pint cold water, let stand for one hour. Add one pint of hot water and juice of three lemons; sweeten to taste and let boil; strain and set away to cool.

For orange jelly, omit the lemon juice, slice four oranges, and place in a glass jar. Pour gelatine over and eat cold.

Strawberry Charlotte.—Make boiled custard of one quart of milk, yolks of three eggs, three-fourths cup sugar. Place in fruit dish, pieces of cake dipped in sweet cream, lay upon this ripe strawberries sweetened to taste, and alternate layers of cake and berries. When the custard is cold pour over it cake and berries. Beat whites of eggs to stiff froth, add three tablespoonfuls of sugar and place on top of custard.

Tapioca Cream.—Soak over night two tablespoonfuls tapioca in one-half teacup milk (or enough to cover), bring one quart milk to boiling point. Beat well together the yolks of three eggs, one-half cup sugar, one teaspoonful vanilla or lemon for flavoring. Add tapioca and stir the whole into boiling milk, let boil, turn into dish, and immediately turn on the well-beaten whites. Serve cold.

Puddings and Sauces.

Cabinet Pudding.—Cream together a quarter pound butter and a pound and a half of sugar. Add the beaten yolks of five eggs, and a half pound of flour moistened with a cup of milk, alternately with the whites. Add lastly a half pound seeded and cut raisins, a quarter pound currants, and the juice and grated rind of half a lemon, well dredged with flour. Cook for two and a half hours in a buttered mold. Serve hot with cabinet-pudding sauce.

This sauce is made as follows: Rub together a cup of sugar and a tablespoonful of butter, add the well-beaten yolks of four eggs, the juice and half the grated peel of a lemon, and a teaspoonful of cinnamon. Beat ten minutes, add a glass of wine, and stir hard. Set in boiling water and beat while heating, but do not let it boil.

Cottage Pudding.—Rub together a cup of sugar and a tablespoonful of butter. Beat in the yolks of two eggs, then add a cup of milk, a teaspoonful of salt, half one of soda, and the beaten whites, and enough of flour to make a moderately thick batter.

To the flour add a teaspoonful of cream of tartar. Bake in a buttered mold, cut in slices, and eat with sauce.

Bread Crumb Pudding.—Take one cup bread crumbs and half cup sugar, put them into a pint of scalded milk, add two tablespoonfuls butter, the rind and half the juice of a lemon. Beat the yolks of two eggs and stir the mixture into them. Bake in a buttered dish about thirty minutes, or until thick and brown. Cool and spread a meringue of the beaten whites, half cup pulverized sugar and the remainder of the lemon juice on the top. Brown in the oven and serve hot or cold.

Bread-and-Butter Pudding.—Cut thin slices of stale bread, butter thickly and sprinkle with sugar. Fit neatly into a buttered pudding dish until half full. Lay on top a plate to keep them from floating, and pour in a custard made of three cups of hot milk, four beaten eggs, and nearly a cup of sugar. Season with vanilla and nutmeg. Let soak for fifteen minutes, then remove the plate and put in the oven. If the bread still inclines to float, hold it down with a fork until the custard thickens. Eat cold. Layers of currants improve this.

Rice Pudding.—Wash a cup of rice and soak for two hours in a pint of milk. Then add three pints of milk, a spoonful of salt, butter of the size of an egg melted, and flavor with nutmeg and cinnamon. Bake two hours.

Bag Pudding.—Take one cup each of milk, syrup molasses, and finely chopped suet, half a pound of currants, and three cups of flour. Mix thoroughly, add a teaspoonful each, of soda and ginger. Pour into your pudding-bag, tie closely, and boil for two hours.

Tapioca Pudding.—Add to three pints of milk eight large tablespoonfuls tapioca. Warm, and let soak until soft. Then stir, and mix in two teaspoonfuls melted butter, four beaten eggs, four spoonfuls sugar, one glass wine, a grated nutmeg and the rind of a lemon. Bake immediately.

Block Pudding.—Take three cups flour, one cup each of molasses, sweet milk, and finely chopped suet, a teaspoonful each of cloves, cinnamon, and nutmeg, and a half pound of raisins. Stir well together, boil for four hours, and serve with sauce.

Baked Indian Pudding.—Mix together half cup corn meal, quarter cup flour, one egg, quarter cup New Orleans molasses, with a little salt, ginger and cinnamon. Stir these into three cups of hot milk. Bake in a moderate oven. When the top begins to brown pour a little cold milk over it and cover it. Bake four to five hours, putting cold milk on the top every hour. Serve with hard sauce or with cream and sugar.

Suet Pudding.—Three cups flour, one cup chopped suet, one heaping cup chopped raisins, one teaspoonful salt, two teaspoonfuls baking powder; mix one cup flour while chopping raisins, then suet and baking powder, then the other cup flour, water enough to finish mixing; put in a sack, boil two or three hours. Sauce:—Tablespoonful flour, butter size of one-half egg, one-half teacup sugar, nutmeg and vinegar to taste, one pint of water, boil all together.

Batter Pudding.—One pint milk, four tablespoonfuls flour, pinch of salt. Scald the milk, taking out some to smooth the flour, then stir into the milk until it thickens and stand away to cool. At noon beat the yolks of five eggs and stir in, then the whites well beaten and bake twenty or thirty minutes. Serve while hot. Sauce:—Cream, one cup sugar, one tablespoonful butter, add flavoring and one-half pint of whipped cream.

Chocolate Pudding.—One quart sweet milk, one small cup of sugar, two well-beaten eggs, six tablespoonfuls grated chocolate, two heaping tablespoonfuls corn starch, dissolved in a little cold milk, a small piece of butter. Let boil a few minutes, stirring constantly. To be served with whipped cream, or sugar and cream.

Cottage Pudding.—One cup milk, one-half cup sugar, one egg, two tablespoonfuls melted butter, one teaspoonful baking powder, sifted with one pint of flour. Bake half hour and serve with liquid sauce. Sauce:—Two tablespoonfuls flour, one cup sugar, teaspoonful vanilla, tablespoonful of

butter; mix these with one tablespoonful of cold water, put in sauce-pan and pour slowly in a little less than a pint of boiling water.

New Century Pudding.—Take one cup each of suet, sugar, currants, raisins and milk, add three cups of flour. Shred and chop fine the suet and prepare the fruit. Beat together until light the suet and sugar and the yolks of two eggs; add the milk and flour; beat until smooth; add the beaten whites of the eggs, a teaspoonful each cinnamon and a little salt, and a teaspoonful baking powder. Mix well, flour the fruit and add; turn into a greased mold and boil for three hours. Serve hot, with wine or hard sauce.

Cream Pudding.—Stir together one pint of cream, three ounces sugar, yolks of three eggs, a little grated nutmeg, add the well-beaten whites, stirring lightly, pour into a buttered pie plate on which has been sprinkled crumbs of stale bread to the thickness of an ordinary crust, sprinkle over the top a layer of breadcrumbs and bake.

Cocoanut Pudding.—One pint sweet milk, one-half cup sugar; let milk come to boil (in custard kettle), add sugar, four tablespoonfuls of corn starch dissolved in cold milk, two cups grated cocoanut (less will do), stir well, cook until it thickens, remove from fire, gently beat in the whites of four eggs well beaten, one-fourth teaspoonful of lemon and vanilla each. Pour in molds and serve with whipped cream when cold, or pour half in mold, add a few drops of red fruit coloring to the remaining half and pour on top, or flavor part with two spoonfuls of melted chocolate.

Cup Pudding.—Make a batter as for waffles; to one pint of milk allow two eggs and enough flour to thicken, one teaspoonful baking powder, stirred in the flour. Butter a sufficient number of teacups and fill with this and fruits in layers. Set cups in a steamer, boil water underneath for one hour. Serve while hot with sugar and cream. Any jam or raw apples chopped fine is nice with this.

Lemon Pudding.—The juice and grated rind of one lemon, one cup sugar, yolks of two eggs, three tablespoonfuls corn starch, a pinch of salt, one pint sweet milk; mix corn starch and part of milk to a smooth paste, add lemon and sugar, egg well beaten and the rest of the milk. Line a jelly tin with a rich puff paste one-fourth inch thick, pour custard in, and bake until done; beat whites to a stiff froth, with two tablespoonfuls of sugar, spread over the top, return to oven and brown; serve with whipped cream. This is a rich but not expensive pudding.

Brown Betty.—Chop two cups of tart apples; put a layer into a deep dish, buttered; sprinkle with sugar, and a little butter and cinnamon; cover with breadcrumbs, and add more apple. Continue till the dish is full, add a thick layer of crumbs, cover closely, and steam for nearly an hour in a slow oven. Then uncover and brown quickly. Eat warm with sweet sauce, or sugar and cream.

Cherry Roll.—Seed one quart fruit, sweeten to taste, let it simmer in its own juice until quite thick, pour one quart of milk over a loaf of grated bread, beat three eggs very light, and add the milk, with a little flour and large lump of butter melted. Put the cherries inside the batter and stir well. Steam in cups or baking powder cans two hours.

Apple Roll.—One pint flour, one and one-half tablespoonfuls butter, pinch of salt, add water to make a soft dough, roll one-half inch thick; chop two large apples fine, spread over the cake, roll up, fasten, place in pan to bake. Pour over this one and one-half pints of boiling water, one cup sugar, one-half cup butter. Cover pan, bake one hour, basting often with sauce. For small family use one-half of recipe.

Apple Tapioca.—Pick over and wash three-quarters cup tapioca or sago and soak about one hour. Pour on a quart of hot water, cook till clear; stir often, add salt. Prepare and core six apples, slice or put them whole into a buttered baking-dish, sprinkle sugar and spice over them, and turn in the tapioca. Bake till the apples are soft; flavor with cinnamon and nutmeg. Serve with cream or milk and sugar. Peaches may be used instead of apples.

Pudding Sauce.—One cup boiling water, one tablespoonful corn starch, one-fourth cup butter, one cup sugar, one egg, one-fourth nutmeg, one or two tablespoonfuls of jelly. Wet the corn starch in cold water, stir into boiling water, boil ten minutes. Rub butter and sugar to a cream, add the egg well beaten and nutmeg. Add jelly to the corn starch, and pour this in the egg mixture, and stir rapidly until they are thoroughly blended.

Lemon Sauce.—Mix one-half cup sugar and one tablespoonful corn starch; add slowly one cup boiling water, stirring carefully; boil until transparent; remove from fire. Add four tablespoonfuls of butter, two tablespoonfuls of lemon juice, and a little nutmeg.

Cold Cream Sauce.—Beat together one cup sugar and one-half cup butter, and add a cup rich cream. Stir all to a cream; flavor with vanilla or lemon, and let get very cold before serving.

Plain Cream Sauce.—One pint cream, three ounces brown sugar, and half of a small nutmeg grated.

Hard Sauce.—Cream one-half cup butter, work in one cup pulverized sugar gradually, and add two tablespoonfuls lemon juice or one tablespoonful lemon juice and one tablespoonful vanilla. Beat until foamy. Serve with hot pudding.

Pies and Pastry.

Pie-Crust.—One cup shortening, three cups flour, little salt, rub the flour, shortening and salt all well together. Use enough cold water to hold all together, no more. Handle as little as possible. Crust for one pie:—One coffee cup flour, lard size of an egg, one-fourth teaspoonful salt, water just to wet the other ingredients.

Puff Paste.—Take a pound of flour and three-quarters of a pound of butter. Chop half the butter into the flour. Beat the yolk of an egg, stir it into half a cup of ice water, and with this work the flour into a stiff dough. Roll out thin, add in bits one-third the remaining butter; fold, and roll out again, and continue till all the butter is used. Roll very thin, fold, and set in an ice-cold place for a quarter hour. Then make your crust. This paste will serve both for fruit pies and for oyster patés.

Short-Cake Paste.—Sift together two cups flour, half teaspoonful cream of tartar, and quarter teaspoonful each soda and salt, and rub in half cup of butter, keeping it as cold as possible. Stir in one cup of sweet milk to make a dough soft enough to handle. Turn it on a floured board; divide the dough into halves and roll each piece out to fit a round tin plate. Bake at once, in a hot oven. When done, turn out each cake and lay it on the under side of the baking-tin. With a thin, sharp knife, split the cake evenly, and lay the bottom crust on a china plate. Butter each half. Lay partly mashed, sweetened strawberries, peaches, apple-sauce, stewed rhubarb, or any hot cooked fruit suitable for pies, on the under crust, lay the upper crust over it, and serve as a pie. Powdered sugar may be sifted over the top. Serve with cream.

Apple Pie.—Pare, core, and slice tart apples, put a layer of fruit in your crust, sprinkle thickly with light brown sugar, add more apples, and go on till thick enough. Cover with top crust and bake. Sift powdered sugar over the top.

Apple Custard Pie.—Take three cups stewed apples, which make very sweet with sugar, and let cool. Beat the yolks and whites of three eggs separately, and mix the yolks well with the apples, seasoning with nutmeg. Then stir in one quart of milk, beating as you do it. Lastly, add the whites, fill the crusts, and bake without top crust.

Pumpkin Pie.—Take a quart of stewed pumpkin, which has been pressed through a sieve; six eggs, yolks and whites beaten separately, two quarts milk, a cup or more of sugar, and mace, cinnamon and nutmeg for flavoring. Beat all well together, and bake without top crust.

Lemon Pie.—Take the juice and grated rind of one lemon, one cup of white sugar, the yolks of two eggs, three tablespoonfuls of sifted flour and sufficient milk to fill a plate. Bake without an upper crust. Bake till nearly done and then add a frosting made of

the beaten whites of two eggs, and two tablespoonfuls of powdered sugar, and set back in the oven to brown slightly.

Cherry Pie.—Line the dish with crust; fill with ripe cherries, sugared in accordance with their degree of sweetness; cover and bake. Sift white sugar over the top. Fruit pies generally are made in the same way. They should be eaten cold.

Mince Pie.—Take four pounds of meat (boiled lean beef) and apple—two-thirds being apple. Add half a pound of suet. Chop each separately, and when fine mix thoroughly. Then put in three pounds of chopped raisins and two of carefully picked currants, a teaspoonful each of cinnamon, nutmeg, cloves, and half a spoonful of mace, with brown sugar to make very sweet. Add three quarts cider. Mix thoroughly, cover closely, and let stand for a day before using. This will keep all winter, and may be used as wanted. The flavor is much improved if it is allowed to stand a week or so. Add one pint of brandy if desired.

Cocoanut Pie.—One large cup of grated cocoanut, one quart of milk, the yolks of five eggs, a lump of butter the size of a hickorynut, sweeten to suit taste. Beat the whites of the eggs and spread over the pies after done, and return to oven and brown. This will make two pies.

Custard Pie.—One-half cup sugar, one quart rich milk, two tablespoonfuls corn starch, yolks of four eggs. Put on stove and stir until thick. Beat whites of four eggs to stiff froth, add two tablespoonfuls sugar, spread on top, and brown. This will make two pies.

Cream Pie.—One pint sweet milk, one egg beaten separately, one tablespoonful flour, two tablespoonfuls of sugar, lump of butter; flavor with lemon. Use white of egg for top. Cook in a kettle. Bake crust first. Put into crust, place white of egg on top. Place in oven to brown. This will make one pie.

Ice Cream Pie.—One pint of cream, whites of two eggs, half cup sugar, teaspoonful vanilla. Beat eggs to stiff froth, add other ingredients, bake with one crust.

Strawberry Pie.—Line a deep pie pan with rich crust, and bake. Fill with the following: Whites of two eggs, half cup of sugar, one pint of fresh berries. Beat the whites to a stiff froth, and stir in sugar and berries. Bake slowly fifteen minutes.

Pieplant Pie.—Mix half cup sugar with one heaping teaspoonful flour; sprinkle over the bottom crust, then add pieplant cut up fine; sprinkle over this another half teacup sugar and heaping teaspoonful flour; bake with upper crust fully three-quarters of an hour in slow oven.

Pineapple Pie.—Five eggs, one cup sugar, one-half cup butter, one cup sweet cream, one pineapple grated. Beat the butter and sugar to a cream, add the beaten yolks of the eggs, then the pineapple and cream, and lastly the beaten whites whipped in lightly. Take each section out with a steel fork and cut off the blossom, then chop them up very fine, and add the grated core or heart. Bake them with an under crust only.

Peach Pie.—Slice the peaches; line a pie plate with crust and lay in fruit, sprinkling with sugar. Ripe peaches need little. Add three chopped peach kernels to each pie; add a little water. Bake with an upper crust, or with cross-bars of crust.

Strawberry Short-Cake.—Take two cups flour, two teaspoonfuls baking powder, one-quarter teaspoonful salt. Sift into a bowl, rub in two tablespoonfuls butter, beat one egg, mix it with one cup of milk, and stir it gradually into the flour to make a smooth dough. Spread it in a greased pan, and bake in a quick oven twenty or thirty minutes. When done turn it on a hot plate, split open quickly and butter it. Spread strawberries over the lower half, sprinkle sugar over the berries, and replace the upper half; put another layer of strawberries and sugar on top. Serve cold or hot, with cream. Other berries, peaches or oranges may be used instead of the strawberries.

Apple Dumplings (Boiled).—Make your crust of a quart of flour and a quarter pound of suet, with a teaspoonful each of salt and cream-of-tartar and half one of soda. Make into a tolerably thick paste with cold water.

Roll, cut into squares, and put into each a pared and cored apple. The hole left by the core may be filled with marmalade, or with sugar moistened with lemon juice. Close the paste over your apple, tie the dumplings in cloths, and boil for an hour.

Apple Dumplings (Baked).—Into one quart flour drop two tablespoonfuls of lard (or lard and butter mixed) and add two teaspoonfuls cream-of-tartar. Then put in a teaspoonful of soda, and wet quickly with milk until stiff enough to roll into a paste half an inch thick. Cut into squares, lay in each a pared and cored tart apple, and close the paste around it. Lay in a buttered baking pan and bake till finely browned. Then brush with a beaten egg, and let glaze in the oven for a few minutes. Eat hot, with rich sweet sauce.

Jellies, Jams, Etc.

Apple Jelly.—Slice nice clean apples in preserving kettle with enough water to almost cover. When stewed soft, strain through the jelly bag. Measure juice and boil twenty minutes. Add two-thirds as much sugar as juice. Boil five or ten minutes longer. Always boil jelly as fast as possible.

Crab Apple Jelly.—Wash fruit clean, put in kettle, cover over with water and cook thoroughly. Pour into sieve and drain. Do not press it through. For each pint of juice allow one pound sugar. Boil twenty to thirty minutes.

Blackberry Jelly.—Wash berries and put in porcelain kettle with enough water to keep them from sticking. Cook a few minutes, then drain through jelly bag. To one pint of sugar add two pints of juice. Boil until it jellies.

Quince Jelly.—Wash, core and slice in small pieces. Stew in plenty of water until fruit is soft and juice is rich. Pour all juice off; for jelly use one pint of juice and one pint of sugar. Boil until it jellies.

Currant Jelly.—Wash the fruit in a stone jar, squeeze through a flannel bag, then strain without squeezing to obtain a clear liquid. Boil briskly in porcelain-lined kettle for twenty minutes, then stir in heated sugar; skim, boil two minutes longer; warm your tumblers and fill with the hot liquid; stand it away twenty-four hours to jelly. If not done then, cover the tumblers with window glass and let stand several days in the sun.

Grape Jelly.—Take grapes just turning ripe, wash, put in granite kettle with very little if any water, let simmer for one hour. Then mash, strain through flannel bag, let come to a boil. While this is heating put sugar in moderate oven. ("A" sugar is best.) For two cups juice take one cup of sugar; let boil for five minutes, then simmer ten minutes more. Strain again through another flannel bag into glasses. Do not make more than three glasses at once.

Calf's Foot Jelly.—Clean four calves' feet, put in a kettle of cold water and let simmer for eight hours; reducing from six to two quarts. Strain the liquid and let stand till next day. Next remove all fat from the surface and sediment from the bottom. Put in a kettle over the fire; add cinnamon and sugar, the juice of four lemons, two oranges, and the whites of two eggs slightly beaten. Mix well, boil hard for twenty minutes; throw in a gill of cold water, let boil again, then cover and stand at side of range for twenty minutes. Next pour into a flannel jelly bag, warmed, and let drip into a bowl. Do not squeeze or touch the bag. Turn into molds and stand in a cold place. If you desire, a half pint of sherry wine may be added before putting it into the molds.

Cider Apple Butter.—Boil one barrel of new cider down half, peel and core three bushels of good cooking apples. When cider has boiled to half the quantity add the apples and continue to cook.

Peach Butter.—Cook peaches until they will mash easily, run through a sieve: add pound for pound of sugar and peaches, stir until well cooked.

Tomato Butter.—Scald and remove skin from nice sized tomatoes, slice and mash fine, to each quart of tomatoes add a quart of granulated sugar; let cook fast, stir until done.

Lemon Butter.—Grate the rinds of three lemons, and add the juice. Beat

together two cups sugar and three eggs, and add one teaspoonful butter. Stir all together and boil to the consistency of strained honey.

Strawberry Jam.—Take a quart of berries, mash with a potato masher, add one pint granulated sugar, and cook fast, stirring constantly, until of the desired consistency.

Raspberry Jam.—To five pounds red berries add an equal quantity of granulated sugar. Mash the berries in a kettle, put in the sugar, let boil until it jellies upon a cold plate.

Pineapple Preserves.—Pare, slice pineapples; to every pound of fruit add one pound of sugar; place in jars a layer of apple, then of sugar; let stand over night; take juice off of the fruit and boil until it thickens; pour in the fruit and boil fifteen minutes; take apples out of syrup to cool; then put in jar and pour syrup over and seal.

Quince Marmalade.—Stew as many apples as you wish to put with your quinces, and strain the juice as for jelly. Pare and core the quinces, put in a bowl and chop as fine as desired; put in a vessel and cover with the apple juice, add a little water if necessary, and cook until the fruit is tender. Skim the fruit out carefully, strain and measure the juice; add sugar as for jelly, and boil until almost jellied. Drop in the fruit and cook until it begins to jelly. Put in jelly glasses.

Preserved Strawberries.—One large cup of sugar to one pint of berries. Add enough water to dissolve sugar, and boil to a thick syrup. Add berries, and boil rapidly fifteen minutes. Cook small quantity at a time.

Preserved Rhubarb.—Cut as for pies, without peeling; take the same quantity of sugar as you have fruit, put a small piece of butter in the bottom of a porcelain or granite kettle; place the sugar and rhubarb alternately in the kettle, place on the back of range and cook slowly, stirring occasionally, until sugar is dissolved; then cook more rapidly until preserved.

Preserved Peaches, Pears, Plums.—Make fruit ready for preserving; to each pound of fruit use three-fourths to one pound of sugar and one cup water, according to tartness of fruit, boil syrup from five to ten minutes, then put in fruit; boil until fruit looks clear; fill jars and close.

Spiced Currants.—Make a syrup of three pounds of sugar, one pint vinegar, two tablespoonfuls each of cinnamon and cloves, one-half teaspoonful salt; add six pounds of currants, and boil one-half hour.

Spiced Peaches, Pears, and Sweet Apples.—Take five pounds fruit, three pounds sugar, cloves and cinnamon to taste; one pint cider vinegar; have the syrup hot, cook until tender.

Canned Strawberries.—Wash berries thoroughly before picking off stems; weigh them. To each pound of berries allow one-quarter pound of sugar. Let them cook fifteen minutes; after they come to a boil they are ready to can.

Canned Peaches, Pears, and Quinces.—Prepare fruit for canning, place in kettle; to each quart of fruit put four tablespoonfuls of sugar; put in water to prevent burning, heat slowly to a boil, then boil three or four minutes, can and seal. Cook pears and quinces longer.

Canned Cling Peaches.—Take one quart of granulated sugar, one quart of water, let boil, add three quarts of nice smooth peaches, peeled; let boil slowly twenty minutes. This is sufficient for two quart cans. Have cans hot and dry; fill and seal while hot.

Canned Tomatoes.—Scald nice smooth tomatoes and cook in granite kettle; "simmer," not boil, ten minutes; salt, pepper as for use; then fill cans very full; just before sealing put in a lump of fresh butter the size of a walnut. Tomatoes canned this way will keep for years.

Canned Corn and Tomatoes.—Peel and slice tomatoes (not too ripe) in the proportion of one-third corn to two-thirds tomatoes; put on in porcelain or granite kettle; let boil fifteen minutes; can immediately in tin or glass. Some take equal parts of corn and tomatoes, and prepare as above.

Canned Rhubarb in Cold Water.—Cut rhubarb in small pieces as for pies without peeling; fill Mason jars with fruit; pump

water over it rapidly to force out all air. Put lids on tightly at once. Set in a dark, cool place.

Baked Apples.—Wipe and core sour apples. Place them in an earthen or agate-ware baking dish—never use tin for apples—and fill the centre of each apple with sugar. Measure one tablespoonful water for each apple, and pour it around the apples, being careful not to pour it through the centres, so as to take away the sugar. Bake until the apples are soft, from twenty to forty-five minutes. When done, place on an attractive dish. Strain the juice, measure, and put it into an agate saucepan. For each half cup of juice add one-third cup sugar. Boil five minutes, and pour it over the apples. Serve cold with milk or cream.

Baked Pears.—Remove the skin and leave the pears whole, or cut them into quarters and take out the cores. Put into a deep earthen dish. To each pint of fruit add quarter cup brown sugar, quarter cup water. Cover, and bake in a moderate oven until soft. This dish is good if baked one hour, but becomes richer if cooked three or four hours. Apples, peaches and quinces may be baked in the same way.

Apple Sauce.—Quarter, pare and core sour apples. Put them into an agate saucepan, with just enough water to keep them from burning, and cook until soft. Stir in sugar, allowing half cup sugar for six medium-sized apples, and boil five minutes. Strain through a wire strainer. Cool and serve.

Stewed Apricots.—Wash one pound dried apricots carefully, taking each piece in the fingers. Put them into a pan with three cups water, and soak two hours or over night. Then cover them and stand them over a moderate fire. Let them come to a boil, and cook gently ten minutes. Add half cup sugar and cook five minutes longer.

Stewed Prunes.—Prepare and cook them in the same manner as apricots. One pound of prunes will require a quarter cup of sugar. Just before removing from the stove, add two tablespoonfuls lemon juice. The prunes should be soft, but not broken.

Stewed Cranberries.—Take four cups cranberries. Pick them carefully. Put them into a pan with a cup of water, and cover them closely. Stand them over a moderate fire, let them come to a boil, and cook gently eight minutes. Add two cups of sugar, and cook two minutes longer. When cold the skins will be tender and the juice will form a delicate jelly.

Cranberry Jelly.—Cook the fruit as directed in the above recipe and press it through a strainer into a mold or glass dish.

Cranberry Sauce.—Put a quart of ripe cranberries into a saucepan with a teacupful of water. Stew slowly, stirring often; cook ten minutes. Take from fire and sweeten well with white sugar. Put into a mold. Or strain the pulp through a sieve into a mold wet with cold water, and when firm turn into a glass dish. Eat with roast turkey or game.

Steamed Rhubarb.—Wash one cup of rhubarb and cut it into inch pieces without removing the skin, as this gives a pretty pink color to the juice. Put it in an agate double boiler without water, sprinkle one-third cup of sugar over it and steam half hour, or until soft. Do not stir it, as it breaks the pieces.

Ices and Ice Cream.

General Rules.—Ice (or snow) and salt are necessary for freezing cream, fruit, etc. Salt melts the ice, and in melting it absorbs heat from the cream, thus causing the cream to freeze. For each cup of rock salt used, allow three cups of broken ice. Pound ice in a bag or piece of carpet.

To pack the freezer: Put three cups pounded ice around the can, then sprinkle one cup of rock salt, and pack in alternate layers of ice and salt until within an inch of the top of the can. Let it stand from ten to twenty minutes to chill, then turn or beat until the cream is frozen. Pack away with ice and salt around and over the can.

Vanilla Ice Cream.—One quart of cream, one pint of milk, two cups sugar, one tablespoonful vanilla, white of one egg, beaten; strain cream. For peach ice cream leave out vanilla and add one quart of peaches, mashed fine, after cream is part frozen.

Put the mixture into a can with a tight cover and stand it in a pail. Pack the ice and salt around it, beat the cream, and turn the can back and forth, opening it once in five minutes to scrape the cream from the sides of the can and stir thoroughly. It should freeze in twenty minutes.

Strawberry Ice Cream.—One quart cream, one pound sugar, one and a half quarts strawberries; put one teacup new milk and half the sugar on to boil in a double boiler; when sugar is dissolved set aside to cool; rub the berries through a colander, and then add the remaining half of the sugar to them; pour the sweetened milk and cream into the freezer and freeze; when nearly done add the berries and beat thoroughly.

Banana Ice Cream.—Remove the peel from eight ripe bananas, mash them into a pulp, then beat them thoroughly with one quart of cream. Sweeten and freeze the same as ordinary cream. The bananas may be grated or chopped fine.

Chocolate Ice Cream.—Melt one and one-half squares Baker's Chocolate and dilute with hot water to pour easily, add one quart thin cream; then add one cup sugar, a sprinkle of salt, and one tablespoonful vanilla, and freeze.

Orange and Lemon Water Ice.—Juice of four lemons, juice of four oranges, four cups sugar, four cups water, whites of four eggs, well beaten, add last, then freeze very slowly.

Lemon Water Ice.—To the juice of six large lemons add one quart water and one quart sugar. Make a syrup of part of the water and sugar, then add lemon juice and rest of water. When half frozen add whites of four eggs beaten to a stiff froth.

Fruit Ices.—Take three each of oranges, lemons and bananas, and one pint of strawberries or raspberries. Put the fruit into a coarse strainer and rub it through into a large bowl. Pour three cups of cold water through the strainer, add three cups of sugar. Stir and freeze.

Lemon Sherbet.—Juice of four lemons, strained, one quart water, one and a half pints granulated sugar, one-fourth box Pink Plymouth Rock gelatine, soaked in cold water half an hour; place in vessel in warm water to melt; one teaspoonful vanilla, one pinch soda; mix all together, then put in freezer and when nearly done add the well-beaten white of one egg, then freeze until solid. Sufficient for fourteen persons.

Pineapple Sherbet.—Two large pineapples or one quart can, one and one-fourth pounds sugar, juice of two lemons, one quart of water. Pare the pineapples, cut them, and remove the cores, or the pineapple may be grated around them; boil the sugar and water together for five minutes, take it from the fire, add the grated pineapple and the juice of the lemons; strain through a cloth, pressing hard to get all the juice. Freeze, and when almost done add the meringue, which is made as follows: Beat the white of one egg until frothy, then add a tablespoonful of powdered sugar and beat until white and stiff.

Milk Sherbet.—Put one quart of milk into the can and let it freeze five minutes. Mix together two cups of sugar and the juice of three lemons; stir into the milk, and freeze.

Pickles and Salads.

Gherkin Pickles.—Use small cucumbers or gherkins. Pack in a stone jar in layers, salting each layer thickly. Cover the top layer deep with salt, pour cold water to cover all, and weight with a board and stone. Leave in the brine a week to a month, stirring up daily. When ready to put up, throw off the brine and pick out any softened cucumbers. Soak for a day in fresh water. Then change the water and leave another day. Put them now in a kettle, lined with vine leaves, throwing in a little powdered alum; fill with water, cover with vine leaves, and steam five or six hours. When the pickles are green take out the leaves, and throw the pickles into ice-cold water.

To one gallon of vinegar add a cup of sugar, three dozen each whole black peppers and cloves, half as much allspice and a dozen blades of mace. Boil five minutes. Put the cucumbers into a stone jar, and pour over them the scalding hot vinegar.

Scald the vinegar several times, at intervals of two to five days, and return. Finally cover the jar and put in a cool dry place. The pickles will be ready for use in two months. They should be examined at intervals of a few weeks.

Cucumber Pickles.—Wash cucumbers carefully and put in weak salt water over night. In the morning drain them and put on stove in weak vinegar, half vinegar and half water, to which has been added alum, a piece the size of a small hickorynut to a gallon. Let them heat slowly until scalding hot. Have ready in another kettle good cider vinegar to which has been added sugar, in the proportion of one teacup sugar to one quart vinegar. Have cans hot and pack cucumbers in closely, scattering mixed spices through them as desired. When can is full pour over the sweetened vinegar, boiling hot, and seal.

Pickled Beets.—Boil until quite soft; when cool cut lengthwise to size of small cucumbers, boil equal parts vinegar and sugar with half a tablespoonful ground cloves, tied in a cloth, to each gallon; pour boiling hot over the beets.

Pickled Onions.—Peel the onions, cook in salt water till they begin to get tender. Take out of water and drain, pack in cans, take enough hot vinegar to cover them, add sugar and spices to taste.

Pickled Cauliflower.—Break three heads in small clusters, lay in salted water three minutes, then drain, use small onions if liked. Boil one quart cider vinegar, and one cup sugar together. Mix mustard, celery seeds or spices to suit taste. Put in jars, pour over vinegar while hot, seal.

Pickled Cabbage.—Chop cabbage fine, take enough for one-half gallon can, put in tablespoonful of salt, let stand over night, drain and add two tablespoooonfuls of mustard seed, one pod of red pepper and horseradish. Mix well, then put in can, press tightly; then pour over cabbage enough vinegar to cover, seal in glass self-sealers

Chow Chow.—Take six cucumbers just before they ripen, peel and cut in strips and remove the seed, four white onions, six good-sized heads of cabbage, chop all fine; let them stand in salt water over night. Then pour off the water, and add vinegar and spices to suit taste.

Tomato Pickles.—Slice thin one gallon green tomatoes, salt and let stand over night; next morning drain, chop one gallon cabbage, grate one quart horseradish. Put tomatoes on in vinegar, boil until tender, pour over cabbage, let stand till cool, and drain. Mix horseradish, celery, mustard seed and mixed spices; then boil vinegar and sugar and pour over them.

Piccalilli.—One peck green tomatoes, one dozen onions, six red peppers, one-half ounce ginger, one-quarter of an ounce of mace, one tablespoonful black pepper, one box of mustard, five cents' worth of celery seed, one pound of brown sugar; slice onions, tomatoes, and peppers, put in a jar with salt, mix well, let stand twenty-four hours; drain off and boil in vinegar (after adding the spices) until clear.

Mixed Pickles.—One-fourth peck green tomatoes, twelve large pickles, three dozen small pickles, eight large onions, two heads cauliflower, one pint small green beans, one pint salt. Place in jar, let stand over night, rinse in cold water. Take equal parts vinegar and water, put in the ingredients, boil until tender (about ten minutes), drain, put three quarts vinegar, one pound brown sugar, one-half pound mustard seed, five cents' worth turmeric, one-fourth pound ground mustard, four tablespoonfuls black pepper, one ounce celery seed. Let come to a boil, put in jar and seal.

Tomato Sweet Pickles.—Slice tomatoes, salt and let stand over night; then drain well and place in porcelain kettle and cover with vinegar; let come to boil, then lift out the slices with a fork and place in cans previously heated. Have a syrup ready. Two pints sugar, one of vinegar, with spices to taste; let boil till thick and pour over tomatoes, then seal.

Ripe Tomato Pickles.—For seven pounds of tomatoes, make a syrup of one quart of vinegar and four pounds of sugar. Scald, skin and drain the tomatoes. Boil them in the syrup, adding a little stick cinnamon. Must boil a long time, or until quite thick, or they will not keep unless in air-tight cans.

Pickled Pears.—One quart of vinegar, two quarts sugar; boil together; pour over pears; let stand over night. In the morning pour hot boiling syrup on pears; let cook until tender; put fruit in cans; add one-half ounce of cloves, one ounce stick cinnamon; boil in syrup until thick. For one gallon of pears.

Pickled Peaches.—For six pounds of fruit use three of sugar, about three dozen cloves, and a pint of vinegar. Put one or two cloves into each peach. Have the syrup hot; cook until tender.

Pickled Cherries.—To every quart of cherries (fresh tart ones) add a cupful of vinegar and two tablespoonfuls of sugar, with a dozen cloves and six blades of mace. Boil the vinegar, sugar and spices five minutes, and after it has cooled strain out the spices, and pour the vinegar over the cherries, which have been placed in jars till three-quarters full. Cork or cover tight.

Higdin Pickle.—Take one peck green tomatoes and a dozen medium-sized onions. Cut and slice these, and salt and mix together. Let them stand over night, then drain them well, and add one ounce each of cloves, allspice and pepper, and a quarter pound of mustard seed, also a pound of sugar and horseradish to taste. Place the mixture in an earthen vessel, cover with vinegar, and cook over a slow fire until tender.

Pickled Oysters.—Put 150 oysters into a suitable vessel, and salt to taste; then put over a slow fire, bringing the liquid to a simmer, not a boil. Take out the oysters and put into a stone pot. To the liquid in the saucepan add a pint of good vinegar, a few heads of mace, three dozen each of whole cloves and pepper, and let come to a boil. When the oysters are cold pour the liquid over them.

Tomato Catsup.—Boil for half an hour three gallons of good ripe tomatoes. Strain through a sieve. Then put on and boil down to two gallons. While boiling add two ounces each of whole cloves, allspice and cinnamon, and a quarter pound of black pepper. When done take off, cool, add one-quarter pound mustard and half a pound of sugar. Stir well, and put in a quart of best cider vinegar for each gallon. Bottle and seal up for winter use.

Apple Salad.—Take one-third more apples than celery (chopped), put in as many English walnuts or hickorynuts as you like. Dressing; Yolks of three eggs, beaten, one teaspoonful mustard, two teaspoonfuls of salt, one-fourth saltspoonful of cayenne, two tablespoonfuls sugar, one tablespoonful butter, one cup cream, one-half cup of hot vinegar. Whites of three eggs, beaten stiff; cook in a double boiler until it thickens like soft custard.

Cabbage Salad.—Two quarts of chopped cabbage, two level tablespoonfuls white sugar, one of black pepper, one of mustard. Rub yolks of three hard-boiled eggs until smooth. Add two tablespoonfuls butter, slightly warmed. Mix with cabbage and add one teacup good vinegar. Serve with whites of eggs, cut in rings and placed on salad. Salt to taste.

Cold Slaw with Cream Dressing.—Slice cabbage fine, season with salt. Make a dressing of one-half cup whipped cream, two tablespoonfuls sugar, four of vinegar and pour over cabbage.

Cold Slaw.—Chop cabbage fine, then put in a crock, add sugar, salt and pepper to taste; mash all together with a potato masher until juicy; add either sweet or sour cream to make real moist, and vinegar to suit taste.

Cooked Slaw.—One small head of cabbage cut fine; put one tablespoonful butter in a skillet; when melted, stir in the cabbage. Mix the yolk of one egg, one-third cup vinegar, a little mustard, sugar and salt, pour on the cabbage and heat, then serve.

Lettuce with Cream Dressing.—Carefully look over and wash lettuce, and tear in pieces. To two tablespoonfuls fresh meat fryings add one tablespoonful flour, while hot add one cup sour cream, salt and pepper, stir rapidly until it thickens, then pour over lettuce and stir very little, dish up and lay slices of hard-boiled eggs over the top. Sugar or vinegar may be added at the table.

Nut Salad.—Mix one cup chopped English walnut meats, with two cups celery or shredded lettuce leaves; arrange on lettuce, and serve with Mayonnaise dressing.

Potato Salad.—Slice thin, eight cold boiled potatoes, and cover with a dressing made as follows: Yolk of one hard-boiled egg, mashed fine, one teaspoonful of mixed mustard, four tablespoonfuls of melted butter, four tablespoonfuls of vinegar, salt and pepper. Finely chopped onion may be added.

Fruit Salad.—To one package Plymouth Rock gelatine, add a pint of cold water, the juice of four lemons, the grated rind of one. Let stand one hour. Add one pint boiling water, two cups sugar. Let boil and strain through a cloth into a mold. When about to congeal stir in fruit. One pound white grapes, seeded, one-half pound candied pineapple, one-half pound candied cherries, cut in pieces. Let stand on ice to cool and harden, then serve.

Tongue Salad.—Boil, skin and trim a tongue, cut in dice and add the whites of six hard-boiled eggs cut in similar pieces. Cut fine the white stalks of three heads of celery and mix with tongue and eggs. Make a dressing as follows: Beat together four eggs, six tablespoonfuls of vinegar, five of melted butter, one of prepared mustard, one of sugar and two-thirds of a cup of cream. Put over the fire in a double boiler and cook until as thick as boiled custard. Set aside to cool; season with salt and pepper, thin with lemon juice, mix with the tongue and other ingredients, and serve.

Cream Salad Dressing.—Mix one-half each, salt and mustard, with one tablespoonful of sugar, add one beaten egg, two and one-half tablespoonfuls butter, and three-fourths cup sweet cream, add slowly one-fourth cup vinegar; cook until it thickens, then strain and cool.

Mayonnaise Sauce.—Mix in a two-quart bowl one even teaspoonful ground mustard, one of salt, and one and a half of vinegar, beat in the yolk of a raw egg. Then add very gradually a half pint of pure olive oil. Beating briskly all the time. The mixture will become a very thick batter. Flavor with vinegar or fresh lemon juice. If covered closely it will keep for weeks. If the dressing curdles, take another yoke of egg and add to it the curdled mixture slowly, stirring constantly.

Salad Dressing.—Yolks of three eggs, one tablespoonful sugar, a lump of butter size of a small egg, a pinch each of salt, and cayenne pepper, one teaspoonful of prepared mustard. Stir all together, add one-half pint of vinegar, set over fire and stir constantly until it becomes about like custard. This will keep several days in a cool place. Very nice served with nice ripe tomatoes. Peel and cut out a little of the top with a teaspoon; serve it on a lettuce leaf with the salad dressing.

Salad Dressing.—Yolks of three eggs, one teaspoonful mustard, one teaspoonful salt, a sprinkle of cayenne, two tablespoonfuls of butter, one cup milk, or cream. Stir the above together. When well beaten, pour over one-half cup of hot vinegar Have ready the whites of three eggs, beaten stiff. Cook in double boiler, stirring all the time it is cooking, using an egg beater to stir with. Cook until cream thickens, then bottle. If one bottle of good salad dressing is mixed with the above recipe, it is improved.

Potato Salad.—Boil four or six potatoes, cut in thin slices, pour the hot dressing over and let it stand until cold. Two tablespoons chopped celery may be mixed with the potatoes, and one teaspoon onion juice may be stirred into the dressing after it is cooked. Serve in the same manner as the meat salads. Sliced boiled beets are some times added.

Tomato Salad.—Pour boiling water over four or six tomatoes, and let it stand a moment. Pour off, and add cold water. slip off the skins, slice, and set away to become cold. Serve with the cold dressing. If desired, the slices of tomatoes may be served on lettuce leaves.

Tomato Catsup.—Take a peck of ripe tomatoes, cut each, and boil in a porcelain kettle until the juice is extracted and the pulp dissolved. Press through a colander, then through a hair sieve. Return to kettle;

Blackberry Shortcake

PRACTICAL DIRECTIONS

Sift together three cups of pastry flour, one teaspoonful of salt, and six level teaspoonfuls of baking-powder; with the tips of the fingers, well floured, work in one-third a cup of butter and mix with about one cup and-a-half of milk and water to a soft dough; spread in two buttered pans, smoothing the dough with a knife or spoon. When baked, butter the under crust, and put together with two baskets of blackberries that have been standing mixed with granulated sugar for some time. Sprinkle the berries on top of the cake with powdered sugar. The berries between the cakes and a part of those on top may be mashed if desired.

season with an ounce each salt and mace, a tablespoonful each black and cayenne pepper, powdered cloves, and celery seed (in a thin bag), and same of ground mustard. Boil five hours, stirring frequently and in the last hour constantly. Let stand twelve hours in a stone jar in cellar. Add a pint of strong vinegar; take out the bag of celery seed, and bottle for use. Keep in a cool, dark place. Of the numerous catsups, this is the most useful for ordinary purposes.

Cold Slaw.—Take a fresh, crisp cabbage, and pull off the loose and torn leaves. Cut it into several pieces, and shave each piece into very thin strips. Strain the salad dressing, while hot, over the cabbage, mix it well, spread it out, and set it away to cool. When ready to serve, arrange in a neat mound in the centre of a clean dish. If the cabbage is wilted, soak it for an hour or more in cold, salted water.

Lettuce Salad.—Pick over the leaves carefully and see that they are whole, clean and free from insects. Wash them in cold water, and shake the leaves gently in a cloth to dry them. Arrange on a flat dish with the smaller leaves inside the larger, and serve, with the cold salad dressing on the table.

Boil hard one-half dozen eggs. When cold chop fine with stalks and tender leaves of a root of celery, and a handful of green parsley. Pour over the mixture a sauce made by rubbing together a dessertspoonful of mustard with the same quantity of salt and two spoonfuls of granulated sugar, into which beat well, five spoonfuls of olive oil and five of vinegar.

Candies and Confections.

Butter Scotch.—One cup of light brown sugar, one-half cup of hot water, a tablespoonful of butter, a tablespoonful of vinegar; boil about twenty minutes, testing in cold water; when it begins to thicken it can be flavored by adding half a teaspoonful of lemon or vanilla if desired. Pour on buttered plates and mark into squares as it cools.

Chocolate Caramels.—One and a half pound of brown sugar, one cup of cream, one tablespoonful of butter, half a cake of Baker's chocolate. Mix all together and let cook, stirring frequently until done. Drop a little in water; if done it hardens at once. Just before pouring in pan flavor with vanilla or lemon. Pour in a buttered dish, and before it gets perfectly cold cut in squares by running a knife across the dish. It will break when cold.

Vanilla Caramels.—Two cups of sugar, one-half cup of water, one-fourth cup of vinegar; boil until it will harden when dropped in water, then add one-half cup of cream and two teaspoonfuls of vanilla. Stir to prevent scorching. When it will harden if dropped in water, pour into a greased pan so it will be a half inch thick. When cool enough, cut in squares and wrap in paraffine paper.

Soft Caramels.—Make either with or without nuts. Whites of two eggs beaten stiff, half cup of corn starch, eight tablespoonfuls of pulverized sugar. Stir until stiff enough to manipulate with the hands, then work just with the fingers.

Cocoanut Caramels.—One cocoanut grated fine; take the milk of the cocoanut and add sufficient water to make one pint, to this add three pounds of white sugar. When it boils up well, add one-half teaspoonful cream of tartar dissolved in a little water; boil until it will make a soft ball when dropped in water, then add the grated cocoanut; remove from the fire and beat until it begins to get white—if beaten too long it will crumble; pour into shallow pans and when partly cold cut in squares.

Ice Cream Candy.—Two cups granulated sugar, a scant half cup water, a lump of butter the size of a walnut, and one quarter teaspoonful cream of tartar. Flavor with vanilla. Boil until it cracks when dropped into water. Do not stir. Pour in buttered tins, and when cool pull until white.

Maple Creams.—One cup maple sugar, one-half cup cream or milk, lump of butter; boil until it brittles in cold water. Let stand until cool, then beat to a cream. Put in buttered tins and cut in squares.

English Kisses.—Whites of two eggs beaten dry and stiff, one-half pint granulated sugar, one teaspoonful vanilla, mix thor-

oughly; drop in drops on greased manilla paper and lay half kernels of English walnuts on the top. Bake a light brown.

Molasses Candy.—One quart good molasses, one-half cup vinegar, one cup sugar, butter size of an egg, one teaspoonful baking soda. Boil molasses, sugar and vinegar until it hardens when dropped in cold water, then add butter, and the soda dissolved in hot water; flavor to taste. Pour in buttered dishes and pull when cold.

Taffy.—Put into a pan half cup of butter, two cups brown sugar, and the juice of a lemon or four tablespoonfuls vinegar; stand it over a moderate fire. Stir until it begins to bubble, then draw it to one side of the stove and let it boil slowly. Test occasionally by dropping a little into cold water. If it hardens at once, it is done. Stir in shelled peanuts or walnuts and pour into buttered pans.

Chocolate Creams.—Beat the white of one egg and add to it two tablespoonfuls cold water and half teaspoonful vanilla. Stir in gradually enough confectioner's or XXX sugar to make a stiff dough. Roll into balls the size of marbles, and let dry one hour. Melt quarter pound chocolate in a bowl and put the balls into it in succession. Lift out each ball with a fork and place it on greased paper to harden.

Walnut Creams.—Open English walnuts carefully, that the half-kernels may not be broken. Press the two halves into opposite sides of a sugar-ball, as above described.

Date Creams.—Remove the seeds from dates. Roll sugar-balls into cylinders and press them into the spaces from which the date seeds were taken.

Cherry Creams.—Buy quarter pound red candied cherries. Cut each cherry partly open, and press into the opening a small ball of the sugar mixture.

Lemon or Orange Creams.—Take one teaspoonful of white of egg and mix with it one tablespoonful lemon or orange-juice. Add enough sugar to make a dough, roll it into balls and let it harden.

Fruit Creams.—Take one tablespoonful Sultana raisins, two figs, four dates, and one tablespoonful nut kernels. Chop the fruit very fine and stir all together. Take a portion of the sugar dough, above described, and mix with it the chopped fruit. Roll the mixture into balls, or pat it flat and cut into small squares.

Home-made Candy.—Two pounds white sugar, one pint water; boil until it cracks when dropped in cold water; add three tablespoonfuls vinegar and one-half teaspoonful soda; flavor to taste.

Peanut Candy.—Two cups granulated sugar, one cup chopped peanuts, no water. Put sugar over a slow fire; it melts very slowly. After it has melted a little it turns into very hard lumps, then melts again. When it is free from lumps remove from fire, pour it over the peanuts, stirring with a spoon to prevent them collecting at the bottom of the pan. When cool mark into squares.

Peppermint Drops.—One-half cup sugar, one-half cup water, one teaspoonful vinegar. Boil until done, then beat fast with a fork. Before it gets cold add five drops peppermint oil, beat thoroughly, let fall in drops on buttered paper.

Sugar Candy.—Six cups white sugar, one cup vinegar, one cup water, one tablespoonful butter put in at the last with one teaspoonful soda, dissolved in hot water. Boil without stirring one-half hour. Flavor to suit taste.

Walnut Macaroons.—One cup walnut meats chopped fine, one cup sugar, a little salt, three tablespoonfuls flour. Cook in a buttered tin in a slack oven. When done cut in small squares and lift from tin while warm.

Pop-Corn Balls.—Pop the corn and reject all the hard kernels; place in a large pan. To eight quarts of corn take one pint sugar, scant one-half teaspoonful cream of tartar, and a little water. Boil all together until it hardens in water, then pour over the corn and make into balls.

Beverages.

Tea.—The water for tea should be freshly boiled. An earthenware pot should be used. Scald the pot, put in one teaspoonful tea,

and pour on one cup of boiling water. Cover it and let it steep five minutes. Never allow tea to boil.

Coffee.—To one tablespoonful ground coffee add an eggshell or one-half teaspoonful white of egg and one tablespoonful cold water. Mix together and pour on one cup freshly-boiled water. Let it come to a boil; then steep five minutes. A little boiling water may be poured in the spout of the coffee-pot to clear away the grounds. Serve with loaf sugar and hot cream or milk.

Left-over coffee may be used if poured off the grounds immediately. Keep it in a cool place until needed. Wash the pot out carefully after using.

Filtered Coffee.—Use pulverized coffee. Put one teaspoonful into the upper part of a double coffee-pot and pour one cup boiling water through it. Let it stand a few minutes on the back part of the stove, where it will not boil. Then remove it, and serve.

Cereal Coffee.—Put two tablespoonfuls cereal coffee into the pot and pour a pint of boiling water over it. Let it boil fifteen minutes. Strain and serve with sugar and hot cream or milk. As cereal coffee is made of browned grain, it is a wholesome drink, and is not stimulating.

Chocolate.—Grate chocolate, allowing six tablespoonfuls for one quart of water; mix smooth with a little water, and boil ten minutes; add one quart rich milk, boil five minutes longer, and serve hot with sugar.

Cocoa.—For one cup, take one teaspoonful of cocoa, add either boiling milk or water, or half each; sweeten to taste.

Cream Nectar.—To one gallon boiling water add four pounds granulated sugar and five ounces tartaric acid. Beat the whites of three eggs, and pour into a bottle with a little of the warm syrup; shake briskly, then pour it into the kettle of syrup, and stir it through well. Boil three minutes, removing the scum as it rises. Flavor with any preferred extract, and bottle for use. When wanted to use, take two or three tablespoonfuls of the syrup to a glass of ice-cold water and one-half teaspoonful of soda.

Grape Juice.—Weigh grapes before picking from stem, then pick from the stem and put in a kettle. Add a very little water, cook until stones and pulp separate; strain through a cloth and return juice to kettle. Add three pounds of sugar to ten pounds of grapes previously weighed; heat just to simmering. This makes one gallon.

Lemon Syrup.—Take the juice of twelve lemons; grate the rind of six in it, let it stand over night; then take six pounds of white sugar, and make a thick syrup. When it is quite cool, strain the juice into it; put in bottles, securely corked, for future use. A tablespoonful in a glass of water will make a delicious drink on a hot day.

Lemonade with Fruit.—Use six lemons to a gallon of water; squeeze the juice from lemons and add two teacups of sugar; dissolve and strain. Then add juice of fruit, either cherries or raspberries, or any other fruit you like as a variety.

Fruit Punch.—One dozen lemons, one-half dozen oranges, one can of pineapple; boil four cups of sugar in four pints of water ten minutes; cool, and add one gallon of water. Grate the pineapple, press juice from the lemons and oranges, strain through a coarse towel, serve with cracked ice.

Raspberry Shrub.—Cover the berries over night in a stone jar with vinegar, next morning strain and to one pint of juice put one pint of sugar. Boil ten minutes, bottle hot. Boiled longer will jelly.

Dishes for the Sick.

Beef Tea.—One pound of lean beef cut fine, put in a glass fruit jar, without water, cover tightly and set in a pot of cold water. Heat gradually to a boil and keep hot for three or four hours, until the meat is light-colored and the juice is all drawn out. Season with pepper and salt.

Invalid's Cream Hash.—Boil a good lean, tender, piece of beef until well done; chop fine two tablespoonfuls of the meat; roll four crackers fine, salt and pepper. Mix all together, cover with sweet cream, set in the stove and heat.

Barley Water.—Put a large tablespoonful of pearl barley in a pitcher, pour over it

boiling water, cover and let stand till cold, then drain off the water, sweeten to taste. If desired add the juice of a lemon and grated nutmeg.

Broiled Oysters.—Select large oysters. Lightly grease with butter a wire broiler, place oysters on it and broil over hot coals, watching them closely as they cook quickly. When the edges begin to look ruffled turn them and in a short time they will be done. Have ready a slice of bread nicely toasted and buttered slightly. Place the oysters on it, salt, pepper and butter slightly. Let stand in oven a minute or two. This is a most tempting dish for a sick person.

Oatmeal Gruel.—Mix together two tablespoonfuls of oatmeal, one-fourth teaspoonful salt, one teaspoonful sugar and one cup boiling water. Cook thirty minutes and strain through a fine wire strainer to remove the hulls. Add one cup milk and heat to boiling-point.

Eggs for Invalids.—Put them in a pan, pour boiling water over them, set back on the stove five minutes; season to taste. After eating them this way the sick will not want them any other way.

Corn Meal Gruel.—Stir slowly two tablespoonfuls of corn meal in one quart of boiling water, cook twenty minutes, stir often, add hot water if too thick.

Mutton Broth.—Take two pounds mutton, put in a sauce-pan, with two quarts of cold water and one ounce of pearl barley or rice. When it boils skim well; add one-half teaspoonful of salt; let boil until reduced to one-half. Strain it off and skim off all the fat.

Clam Broth.—Take twelve small hard-shell clams, chop fine, add one-half pint clam juice, or hot water, a pinch of cayenne pepper, small lump butter; simmer thirty minutes, add one gill boiling milk. Strain and serve.

Toast Crackers or Bread Panade.—Toast crackers or stale bread until very brown. Pour over them hot water to cover; cover tightly and steep until cold. Strain and sweeten to taste or drink hot with cream and sugar. Or add lemon juice or a very little nutmeg.

Oyster Toast.—Take six oysters, strain off the liquor, add to it one-half cup milk. When hot add the oysters; boil one minute. Season with butter, salt and pepper. Then pour over hot buttered toast and serve.

Flax Seed Tea.—To one tablespoonful of flax seed add one pint of cold water. Boil slowly for one hour; add sugar to taste and the juice of one lemon. Very good for a cough.

Koumyss.—Heat two quarts of perfectly fresh milk to 165 degrees. Boil together two tablespoonfuls of sugar and two of water; add this to the milk. When it has cooled to 100 degrees, add one-third of a yeast cake dissolved in warm milk. Mix by pouring from one vessel to another. Bottle, cork and tie. Stand upright in a moderately cool place (60 degrees) for twelve hours; then turn the bottles on their sides in a cool place (40 degrees to 50 degrees) for twenty-four hours, and it is ready for use. Open with a syphon.

Cooling Drinks in Fever.—Crush a bunch of Malaga grapes, pour over them one pint of hot water; let stand until cold. Or pour one-half pint of boiling water over one tablespoonful of currant jelly, and stir until jelly is dissolved. Other jellies are good prepared in like manner.

Menus for Various Occasions.

Breakfast.

Fruit.
Oat Meal. Cream and Sugar.
Broiled Steak.
Fried Potatoes.
Biscuit. Coffee.

Lunch.

Cold Chicken.
Saratoga Chips.
Apple Sauce. Wafers.
Chocolate.

Dinner.

Tomato Soup.
Roast Lamb. Mint Sauce.
Boiled Potatoes.

Medallions of Mutton with Green Pea Salad

PRACTICAL DIRECTIONS

Remove the bones and fat from lamb or mutton chops, and skewer the meat in rounds. Braise the meat with the bones and fine-cut vegetables until tender; let cool under a weight cover with brown chaudfroid sauce, decorate with white and yolk of egg, and brush over with liquid aspic. Serve cold with cooked peas dressed with French dressing.

Brown Chaudfroid Sauce.—To a cup of highly seasoned brown sauce add the yolk of an egg, diluted with one-fourth a cup of cream and a scant tablespoonful of gelatine softened in three tablespoonfuls of stock. Use when cold, but still liquid.

Asparagus on Toast.
Cabbage Salad.
Wafers. Cheese.
Peach Ice Cream. Sponge Cake.
Coffee.

Breakfast.

Fruit.
Breakfast Food. Sugar and Cream.
Broiled White Fish.
Baked Potatoes.
Griddle Cakes. Maple Molasses.
Coffee.

Dinner.

Vegetable Soup.
Fried Chicken. Cream Gravy.
Mashed Potatoes.
Sweet Potatoes.
Tomato Salad.
Wafers. Cheese.
Cherry Pie.
Tea.

Supper.

Thin Slices Cold Boiled Ham.
Pepper Sauce. Thin Bread and Butter.
Potato Salad. Cheese Straws.
Raspberry Float. White Cake.
Tea.

Breakfast.

Fruit.
Wheatlet, Sugar and Cream.
Broiled Pork Chops.
Browned Potatoes. Rice Pancakes.
Coffee.

Dinner.

Tomato Soup.
Roast Duck. Currant Jelly.
Sweet Potatoes. Mashed Turnips.
Stewed Celery. Lettuce Salad.
Wafers. Apple Pie. Cheese.
Coffee.

Supper.

Oysters on Half Shell.
Broiled Quail on Toast.
Potato Chips. Olives.
Sliced Oranges. Crullers.
Tea.

A Formal Breakfast or Luncheon.

Bouillon in Cups. Wafers.
Sweetbreads. Rolls.
Broiled Chicken, Cream Sauce.
Peas.
Tomatoes, Mayonnaise Dressing
Thin Bread and Butter.
Charlotte Russe in Molds.
Coffee.

A Wedding Breakfast.

Grape Fruit.
Corn Fritters.
Dumplings stuffed with Cheese,
Cream Sauce.
Biscuits.
Mayonnaise of Tomatoes.
Toasted Bread Fingers.
Ice Cream. Sponge Cake.
Coffee.

A Formal Dinner.

Oysters on the Half Shell.
Horseradish Sauce. Wafers.
Clear Lintel Soup. Croutons.
Olives. Radishes. Celery.
Boiled Cod Shoulder and Head.
Fish Sauce. Potato Balls.
Cucumbers with French Dressing.
Roast Chicken with Chestnut Stuffing.
Cranberry Sauce. Rice Croquettes.
Mint Sherbet.
Roast Small Birds, Sippets of Bread.
Guava Jelly.
Lettuce Salad with French Dressing
Charlotte Russe.
Wafers. Cheese.
Coffee.

Thanksgiving Dinner.

Oyster Soup.
Olives. Celery.
Roast Turkey. Chestnut Dressing
Cranberry Sauce. Pickles. Sweet Pickles
Fruit Salad.

Scalloped Potatoes. Sweet Potatoes.
French Peas. Scalloped Oysters.
Cherry Ice.
Sweet Pudding. Sauce.
Mince Pie. Pumpkin Pie.
Cheese.
Lemon Jelly with Nuts.
Chocolate and Fruit Cake.
Bonbons. Almonds.
Coffee.

Christmas Dinner.

Creamed Clams. Wafers.
Mixed Pickles.
Roast Turkey with Oyster Dressing.
Oyster Sauce.
Celery. Spiced Currants.
Sweet Potatoes. Mashed Potatoes.
Scalloped Corn.
Lemon Orange Ice.
Cold Boiled Ham. Horseradish Sauce.
Tomato Salad. Boston Brown Bread.
English Plum Pudding with Sauce.
Pine Apple Sherbet. Fancy Cakes.
Coffee.
Nuts. Home-made Caramels. Fruit.

Quick Meals.

Breakfast.

Fruit.
Boiled Eggs. Milk.
Coffee. Toast.

Dinner.

Beef Stew.
Hashed Brown Potatoes.
Sliced Tomatoes.
Junket.

Supper.

Toast and Cheese. Brown Bread.
Mayonnaise of Cabbage.
Tea.

Breakfast—in 15 Minutes.

Fruit.
Boiled Rice. Toast.
Coffee.

Luncheon—in 20 Minutes.

Fricasse of Dried Beef.
Graham Bread.
Cocoa. Crackers.

Dinner—in 30 Minutes.

Clear Soup.
Broiled Chops. Baked Rice.
Panned Tomatoes.
Lettuce Cheese.
Coffee.

Small Evening Parties.

Thin Slices Bread. Butter.
Tongue Salad. Cucumber Pickles.
Coffee.

Clam Sandwiches. Mixed Pickles.
Fruit Salad. Cheese Straws.
Tea.

Ham Salad.
Thin Slices Boston Brown Bread.
Butter. Pickles.
Vanilla Ginger Bread.
Coffee.

Oyster Sandwiches. Chow Chow.
Wafers. Cheese.
Chocolate.

Afternoon Receptions.

Clam Broth in Cups. Wafers.
Salmon Sandwiches. Olives.
Tongue Salad in Tomatoes.
Coffee.
Strawberry Ice Cream.
Angel Food. Chocolate Cake.
Bonbons. Salted Almonds.

Chicken Sandwiches. Olives.
Sweetbread with Peas.
Fruit Salad on Lettuce Leaves.
Cheese Straws.
Coffee. Cake.
Neapolitan Ice Cream. Cream Cake.
Salted Mixed Nuts. Bonbons.

Oyster Soup in Cups. Wafers.
Celery.
Chicken Salad. Bread.
Lemon Jelly with Nuts.
Coffee.
Banana Ice Cream. Three-Ply Cake.
Salted Pecans. Olives.
Home-made Caramels.

Small Picnics.

Cold Chicken.
Lettuce, French Dressing.
Bread-and-Butter Sandwiches.
Olives.
Cocoanut Jumbles. Lemonade.

Cold Tongue. Brown Bread and Butter.
Sliced Tomatoes.
Tea. Gingerbread.
For the children, Whole Wheat Bread and Milk, Fruit, Gingerbread.

Cheese Sandwiches.
Stuffed Eggs. Bread and Butter.
Fruits.
Fruit Sandwiches. Cinnamon Bun.
Coffee or Lemonade.

Thin Cold Corned Beef.
Brown Bread and Butter.
Sliced Tomatoes, Plain.
Coffee.
Peaches. Water Thins

TABLE-SETTING AND SERVING

A table should be made to look as neat and attractive as possible.

Dust the table, and lay evenly on it a cloth of felt-flannel or cotton-flannel. Spread the tablecloth evenly over this. The undercloth prevents the dishes from making a noise, preserves the tablecloth and gives the table a better appearance.

The tablecloth should be laid with the hemmed edges underneath, and the lines in the cloth parallel with edges of the table.

The knife is placed at the right hand, with the sharp edge turned to the left; and the fork at the left hand with the prongs pointing upward. A spoon is placed to the right of the knife and the napkin to the left of the fork. All these articles should be about two inches from the edge of the table. The tumbler is placed at the end of the knife blade and the butter plate at the end of the fork. When bread and butter plates are used, place one at the left of each fork.

The Breakfast Table.—Proceed as directed above, with the addition of the carving knife and fork at the right hand of the one who carves, and with the salt and pepper bottles together near the ends or opposite corners of the table.

Arrange the tea or coffee service around the place of the one who is to serve it. Put the tea or coffee-pot on a stand at the right side, with the handle toward the right; next the cream pitcher, with the handle to the right; then the sugar bowl and spoon-holder. At the left hand arrange the cups and saucers.

When mush or breakfast food is used, place a tablespoon, with the handle toward the right, in front of the one who is to serve, and saucers to the left of the tablespoon. The mush, in a covered dish, should stand directly in front of the one who serves it.

The butter should be placed near some one who can conveniently serve it, and the butter-knife in front of the dish, with the handle at the right.

In serving meat, place the platter before the one who is to carve, with the pile of hot plates directly in front or at the left of the carver.

Plates containing hot muffins or rolls should be at opposite ends of the table.

The *supper table* is arranged similarly to the breakfast table.

The Dinner Table.—The dinner table is usually laid for courses.

First.—Soup and rolls, croutons or baked crackers.

Second.—Meat, potatoes and vegetables.

Third.—Dessert.

Arrange the cloths, knives and forks, etc., as directed for the breakfast table. Place at the right of each knife a soupspoon, and a teaspoon or two, if needed.

For the first course, place a ladle with handle at the right, in front of the one who serves the soup, and hot plates at the left.

Soup should be dipped away, not toward, the one who serves it, and the same rule holds in eating it. Sip it quietly from the side of the spoon.

After the soup course is finished, remove the plates by taking them singly in each hand, or on a tray. Never pile soiled dishes to carry away, since it is not pleasing to see and it makes double work in scraping the dishes before they are washed.

The meat and plates for the second course may be arranged as for the breakfast table. After the second course remove everything but the dessertspoons and the tumblers. Pass to the left of each person and scrape off the crumbs, using a tray and a knife, which is cleaner and more thorough than a brush. Place the dessert in front of the one who is to serve it, with the plates or saucers at the left.

General Directions.—When the waiter passes the food to each person it should be passed on the left side of the person. In placing a dish in front of a person the waiter should stand at the person's right. Dishes should be removed from the right side.

Place everything straight upon the table.

Turn no dishes upside down.

In setting the table try not to forget anything. Remember that care in setting a table trains the eye and hand and contributes much to the comfort of a household.

Time Table for Cooking Vegetables.

Potatoes, boiled, thirty minutes.

Potatoes, baked, forty-five minutes.

Sweet potatoes, boiled, forty-five minutes; baked, one hour.

Squash, boiled, twenty-five minutes.

Squash, baked, forty-five minutes.

Green peas, boiled, twenty to forty minutes.

Shelled beans, boiled, one-half to one hour.

String beans, boiled, two to three hours.

Green corn, boiled, one-half hour.

Asparagus, fifteen to thirty minutes.

Spinach, one to two hours.

Tomatoes (fresh), thirty minutes.

Tomatoes (canned), fifteen minutes.

Cabbage, forty-five minutes to two hours

Cauliflower, one to two hours.

Onions, one to two hours.

Beets, one to three hours.

Turnips, forty-five minutes to one hour.

Parsnips, forty-five minutes to one hour.

Carrots forty-five minutes.

Kitchen Weights and Measures.

Two and one-half teaspoonfuls, one tablespoonful.

Four tablespoonfuls, one wineglassful.

Two wineglassfuls, one gill.

Two gills, one teacupful.

Two teacupfuls, one pint.

Four teaspoonfuls salt, one ounce.

One and one-half tablespoonfuls sugar, one ounce.

Two tablespoonfuls flour, one ounce.

Two cups sugar, one pound.

One scant quart flour, one pound.

Ten eggs, one pound.

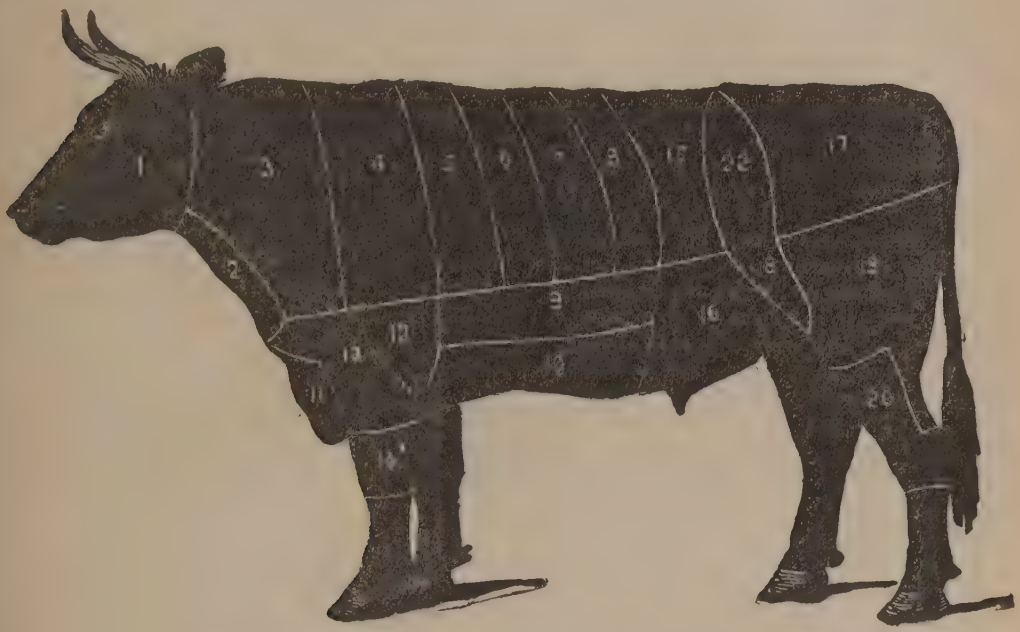
Two cups butter, one pound.

The Cellar and Store Room.

Vegetables will keep best on a stone floor if the air be excluded; meat in a cold dry place where the air is freely admitted; sugar and sweetmeats require a dry place; so does salt; dried meats, hams, bacons and tongues the same. All sorts of seeds for puddings, such as rice, etc., should be kept closely covered to preserve them from insects, but if kept long that will not be sufficient, unless they be occasionally sifted. Apples and pears should be laid upon very clean and dry straw to prevent a musty taste, nor should they be exposed to either light or air. They should be arranged singly in rows, without touching each other, and should be often inspected, both to wipe them if damp, and to reject those which may appear to be getting rotten. The larger sort of pears should be tied up by the stem. Apples may also be preserved in excellent condition for a long period by being packed in large barrels with dry sand, but require to be used immediately they are taken out.

CUTS OF MEATS AND THEIR USES

Every housekeeper, in fact, every one who has marketing to do, should know something of the cuts of all common meats and the most desirable way each can be prepared for the table. In the illustrations below are shown the location of these cuts. The names may vary somewhat in different sections.



Beef.

1. Head. Not used for food.
2. Sticking piece. Soups, beef-tea, stews, corning.
3. Neck. Soups, stews, beef-tea, boiling, corning.
4. Second and third chuck. Brown stews, braising, steaks, poorer roasts.
5. First chuck. Roasts.
6. First cut, standing ribs. Roasts.
7. Middle cut, ribs. Roasts.
8. Back ribs. Roasts.
9. Plate (no bones). Stews, soups, corning.
10. Brisket. Stews, brown stews, soups, corning.
11. Butt end of brisket. Soups, stews, corning.
12. Bolar (no bones). Corning, cheap roasts.
13. Bony end of shoulders. Soups.
14. Shin. Soups.
15. Loin (including tenderloin and sirloin). Roasts and steaks.
16. Flank or skirt. Rolled steaks, braising, boiling, corning.
17. Rump. Roasts and steaks. Meat to be cut across the grain.
18. Veiny piece. Stews, soups.
19. Round. Stews, beef-tea, poorer steaks.
20. Leg. Soups and stews.
21. Tail. Soups.
22. Pin-bone. Roasts.

The bones, gristle, tendons and other gelatinous portions are all excellent for making soup stock

Mutton.

1. Shoulder. Boiling.
2. Breast. Roast, stews, chops.
3. Loin. Best end used for roasts, chops.
4. Neck. Best end, cutlets, stews, pies.
5. Neck. Scrag end, stewing pieces.
6. Head. Not used.
7. Loin. Roasts, chops.
8. Leg. Roasts, boiling.

The Kitchen.

The kitchen arrangements will depend upon many conditions, as size, shape and means of owner. But every kitchen can always be kept neat and tidy and supplied with a stove or range and usual cooking utensils. These we need not describe here. Only a few hints or things which may be overlooked will be needed here.

Since American enterprise has succeeded in supplying cheap time-keepers of reliable performance, every kitchen should include a clock in its outfit. Having learned from cook books and personal experiment the average length of time required to cook the usual meats, poultry, vegetables, etc., make a list of these and hang it up in some convenient place in your kitchen. You will find it of great aid. It will be a helpful supplement to the time-table just given.

The kitchen utensils should include, as useful additions, a small brush for cleaning vegetables which are cooked in their skins, as potatoes and beets; a pair of sharp-pointed scissors for opening fish, small birds, etc.; a wall pincushion containing, besides pins and needles, a large darning-needle for sewing-up poultry; a bag with a thimble, coarse thread, soft cotton for the darning-needle, twine, and narrow strips of muslin for tying up bunches of asparagus ready for cooking; a coarsely crocheted or netted bag for boiling cauliflower; several small boards to set hot pots and pans on, while dishing their contents, and a linked chain dishcloth for scouring the inside of pots and pans when they have been used to cook any article that sticks.

All cooking utensils should be kept free from soot, as less fire is required to boil the contents of a bright, clean saucepan or kettle. Should they have been neglected and have become very black, rub them with a flannel rag dipped first in oil, then in powdered brick, and polish with a dry flannel and a little more brickdust. All pots and pans are easier to wash if a little hot water is poured into them when their contents are emptied out, they being then placed on the rack at the back of the stove or on the hearth until it is convenient to wash them.

Silver should always be washed in clean, hot water, as soap dulls the polish. In washing the dishes, take the glasses first, next the silver, then such dishes as are not greasy, and, finally, the greasy dishes—these are best washed in two waters. Never let steel knives lie in water, as this discolors and loosens the handles. Pouring hot water on them is likely to have the same effect. Always have two cloths for cleaning knives; wet the first with water, dip into brickdust or fine ashes, and rub off all spots; polish with a dry cloth with a little of the dust; then wipe on a clean, dry towel.

It is best to have two sets of tea towels; one set going into the wash each week, and being ironed and, if needed, darned. Close attention should be given to the sink. It should be rinsed out whenever soiled, and when the day's work is done should be thoroughly flushed with clean hot water, so as to wash from the drainpipe trap any impurities which may have lodged there.

OUTSIDE THE KITCHEN

The kitchen, while the humblest, is the most important section of the household, and we have accordingly given ample space to its greatly varied culinary products, and have also spoken of the etiquette and management of the dining-room, which comes next to it in importance. But the duties of family life are by no means confined to these two apartments. The remainder of the house demands its round of daily labors. And here ornament needs to be considered as well as utility. It is here the family spends its hours of recreation, enjoyment, and repose; here many of its social duties are performed; here art and comfort join hands with usefulness and necessity, and it is to the demands of the household at large that our attention must now be directed.

The labors to be performed comprise sweeping, cleaning, the daily care of sleeping apartments, attention to the many small articles of adornment and utility; to clothing,

pictures, books, and furniture; to washing, mending, and a multitude of duties of which every day brings a new list. Let us, for example, rapidly review the ordinary weekly duties in a well-managed household, but one limited to a single maid, engaged for general housework.

Diary of a Week's Work.

On *Monday* the maid is expected to devote the morning to the heavy labor of washing; rising early, and getting the day's labors well under way before the breakfast hour. She will have, besides, the meals to attend to, but these are necessarily made simple and expeditious on that day, the mistress of the household usually finding it necessary to assist in the cooking and dish-washing.

Care should be taken to choose a plain dinner—steaks or chops, potatoes, and some ready-made dessert. The afternoon is occupied in finishing the washing, hanging out the clothes, and getting the tea, which must be a meal easily cooked; for the "tidying up" of the kitchen is yet to be done before the girl can rest. It will be a great assistance, in places where the visiting is sufficiently informal to permit it, if some member of the family open the door to callers on busy days.

Tuesday, by general consent, is assigned to the work of ironing; and here it will usually be necessary for the mistress to "lend a hand," and aid in clear-starching and ironing the fine clothing.

Wednesday is devoted to baking part of the cake, bread, and pies that will be needed during the week. In this work the mistress helps by washing the currants, stoning the raisins, beating the eggs, and making the light pastry. Often a lady who has a taste for cooking makes all the desserts, cakes, and pies. She should never consider it extravagant to supply herself with the best cooking utensils—egg-beaters, sugar-sifters, double-boilers, etc., and, if a good housekeeper, she will find both pride and pleasure in her jars of home-made pickles and preserves.

Thursday the maid must sweep the house thoroughly, for this work, if the carpets are heavy, requires strength. The mistress then dusts room after room, and, last of all, the servant follows with step-ladder to wipe off mirrors and windows. This is morning work, for the Thursday afternoon out for the maid is an established institution.

Friday is commonly occupied in general house-cleaning: scrubbing the floors, cleaning the brasses and silver, scouring the knives, and putting linen-closets and drawers in order.

Saturday is filled with baking bread and cake, perhaps with cleaning the yard or other out-of-door work, and in some households with preparing the Sunday dinner; and the toil of the week closes with a thoroughly swept and orderly house, a clean kitchen, and all the cooking done except the meat and vegetables for the Sunday dinner.

Of course the routine given above will not suit all families; many persons may prefer to make a different apportionment of their work; but whatever the system fixed upon may be, it should be rigidly carried out, and the maid should receive all the help in her manifold duties that punctuality and order bestow.

Under the most favorable circumstances it is a credit to any mistress to carry on the work of a house through the week, with three meals daily, and to accomplish it she must be capable of doing much of the light work herself and be careful to secure a strong and willing maid servant.

Sweeping and Cleaning.

When preparing to sweep a room, it is important to begin by dusting all the bric-a-brac and carrying it to a place of safety. The smaller articles can be placed in a wide shallow basket kept expressly for this purpose, or on a tray. Next, with a soft cheese-cloth or other duster and a whisk, clean carefully all the upholstered furniture; carrying out the small articles, and covering the larger ones with dusting sheets. The glass globes of gas fixtures must be washed in warm, soapy water, and rinsed in cold water, in which a little whiting has been dissolved. Shake the window curtains and fold them up as high as you can reach; pin them there, taking care not to tear them

dust the shades with a feather brush and roll them up as high as they will go.

Brush down the walls, carefully dust the picture frames, and then begin your sweeping. Use a whisk to rid the corners and the edges of the carpet of dust, then gently, but with a steady stroke, sweep all the dirt into the middle of the room, and take it up in a dustpan. Repeat this operation to secure any dust that may have blown back. Should the carpet be very dusty, moist tea leaves or Indian meal, scattered over the floor before beginning to sweep, will gather up most of the fine dust and prevent its rising and settling on the walls, etc. It freshens and cleans a carpet wonderfully to wipe it thoroughly with a woolen cloth wrung out of water mixed with household ammonia.

Ink stains in the carpet may be removed with salt. If they have dried, slightly moisten the salt with water, scatter it over the stains, and keep gently brushing it back and forth until it is quite black, substitute more salt, and so continue until all the ink is drawn out of the carpet and absorbed by the salt. If the ink is freshly spilled, you need not dampen your salt.

Should your window panes need washing in freezingly cold weather, it is best to do it with a soft cloth dipped in alcohol; at other times a little whiting dissolved in the water adds to the brilliant transparency of the glass. In all cases polish with old newspapers. Having attended to your windows, carefully dust again the walls, pictures, gas-fixtures, and all cornices and moldings; draw down your shades, unpin and drape your curtains; fold up the dust sheets so as to gather up all the dust that has settled on them, and carry them from the room, which is ready now to be put in order.

If you burn lamps, keep them scrupulously clean. Wicks soaked in strong vinegar and dried before being used, will not smoke. Two or three times a year the part of the lamp containing the wick should be boiled in water in which washing soda has been dissolved; this will improve the quality of the light and obviate the danger of an explosion.

Nickel-plated lamps must never be washed with soap, as this spoils the polish and makes them look like pewter. Wipe them, instead, with a soft cloth dipped in vinegar. Lamps are more satisfactory when attended to every day.

Cleanliness About the House.

It is very important that beds are properly aired every day. The most effectual way to do this is to throw the clothes over a chair, and lift the mattress partly over the footboard. If a feather bed is used, pull it off upon a chair. Then open the windows and door so that a current of air can pass through the room, and let it remain so for several hours. Beds thus aired are always healthful, and will induce sound sleep in their occupants. Each member of the family should be taught to do this daily, boys as well as girls. They will reap the benefit of it through their lives, and be sure to have their children trained in the same way.

A bed that is aired only occasionally will contract impurities from the body and cannot be fresh and sweet. Some persons hang the pillows out of the window, and this is an excellent plan if the dust is first brushed off the sill.

"Attend," says a wise French writer, "as much to neatness as you do to economy. Accustom girls never to suffer anything about them to be unclean or in disorder; lead them to notice the slightest derangement in a house; say to them that nothing contributes more to economy and neatness than keeping things in their proper place. This may seem trifling, yet it leads to very important consequences; for then when anything is wanted there will be no difficulty in finding it, and when it is done with it will be returned to the place from which it was taken. This exact order forms the most essential part of neatness. For instance, a dish will not be soiled or broken if it is put in its proper place as soon as it has been used. The carefulness which makes us place things in order makes us keep them clean. Joined to all these advantages is that of giving to domestics a habit of neatness and activity by obliging them to place things in order and keep them clean."

HOME DECORATIONS

A comfortable cozy corner, which may be made in any house at small expense by a rearrangement of the furniture or by a boy or man familiar with tools. The sofa is of rough wooden construction, covered with a mattress and a rug or shawl.

HOME DECORATIONS

The Ingle Nook and Mantel. A suggestion for beautifying a room where there is a fire place and mantel and space at each side for artistic seats and cushions. The whole effect is that of warmth and comfort. A few choice ornaments are on the mantel, handy volumes on the shelves and pictures on the wall.

Dust is a constant enemy of domestic comfort, and is a great destroyer of furniture. Inhaled into the lungs it becomes one of the sources of disease. Miss Nightingale remarks, with great truth: "Dusting in these days means nothing but flapping the dust from one part of a room to another, with doors and windows closed." A damp but not wet duster will alone remove dust without scattering it.

Causes of Unwholesomeness.

The healthiness or unhealthiness of a house depends greatly upon its degree of cleanliness. Dirty houses are always more or less unwholesome. In country places care should be taken that no puddles of dirty water remain close to the house, as they not only render the air damp, but cause much dirt to be brought in on the feet. Slops of dirty water, tea-leaves, coffee-grounds, etc., should never be thrown out near the house, all decaying vegetable and animal matter being injurious. Cabbage leaves, potato and apple-parings, and other waste vegetable matters, should never be thrown into the dust-bin. It is far the safest plan to burn them, which can always be done if they are first dried by throwing them at the back of the fire or in the ash-pit.

The inside of a house becomes unclean not only from the dust carried in by the air and the dirt brought in by the feet, but from the odor given out by our skin and with the breath. This odor is absorbed by all porous substances, as the walls, floors, and ceilings, and gives rise to that close, unwholesome smell which is present in all unclean houses, especially such as are overcrowded. No house with such a smell can possibly be a healthy place to live in. This animal effluvium is taken up by some substances much more readily than others. Walls that are covered with paper smell much more offensively than those that are painted. And in rooms where one paper has been pasted over another the whole thickness of paper may absorb it. Painted or lime-washed walls are much to be preferred to paper walls for crowded dwellings and for sleeping-rooms.

Woolen garments, carpets, and curtains absorb such odors freely, and give them out for a long time. Rough wooden floors also take them up, and consequently require frequent washing. For this reason smoothed, waxed, or painted floors are preferable to rough wooden ones.

The wholesomeness of a dwelling is much increased by frequently whitewashing such parts of it as can be treated in this manner—the cellar, storeroom, etc. The dirt and old whitewash should be first washed away with a brush and abundance of clean water.

Care of Floors.

Floors should not be scrubbed too frequently. Once a week is generally sufficient. In damp weather wet floors dry very slowly, and the house remains damp and cold for a considerable time. It is better, in all cases, to defer the scrubbing even for a week than to wet the floors on a damp and rainy day. In cases of illness this is particularly important. It should be a fixed rule that floors, particularly those of sleeping-rooms, are to be scrubbed only on dry days.

Bones, old shoes and boots, dirty woolen rags, and pieces of carpet are often allowed to lie about the house. These render the air impure, and consequently unwholesome, are exceedingly apt to become mouldy, harbor vermin, serve as breeding-places for the clothes-moth, and retain tenaciously any infection to which they may have been exposed. Such things should always be got rid of; if not sold at once, they had better be given away, if of any value, or else burnt, rather than be kept to render the air of the house impure.

Wash as often as convenient. Dirty clothes put by for weeks are more difficult to clean the longer they remain dirty; they acquire a permanent bad color, and in damp places are apt to become mildewed and rotten.

Remove all stains as soon as possible; leave nothing long enough to fix itself thoroughly to the cloth; wash out grease, gravy, fruit-stains, etc., before putting anything to one side. Fruit-stains yield readily to bleaching-powder, especially if, after being put on, it is moistened with a drop of some acid, as vinegar or lemon; but neither acids nor bleaching-powder should be used with

colored things. Ink-stains should never be put into soapy or soda water or lye, as they directly become iron-molds; but they should be instantly wetted with clean water, and may be at once removed by the application of a little salt of lemon or oxalic acid, which should be washed out immediately.

HOUSEHOLD UTILITIES

It is proposed, in the present section of our subject, to give practical advice on various questions of household utility, such as the care of clothing, the cleaning of soiled fabrics, the removal of stains, and other matters of importance which come up almost daily in the experience of housekeepers. Perfumes constitute another matter of importance, and useful information about various other odds and ends of daily life experience is given, suggestions which cannot fail to be of great utility to all who have the care of a family on their hands. In life within doors endless questions of what and how to do under certain circumstances arise, and it is with these exigencies of daily life that we shall here deal.

Care of Furs, Feathers and Woolen Goods.

Many things and substances are recommended for the destruction of injurious insects. Pliny says that the Romans used citron to preserve their woolen garments from moths. We have found that the insects which injure furs, feathers, and woolen goods may be destroyed by the Indian chestnut, cloves, walnut leaves, or common salt. Still more useful as preservatives are cedar chips, pepper, and camphor (in large pieces, for when broken it loses strength).

Whatever the remedy selected, it is necessary in the first place to carefully shake, beat and brush the furs (against the grain), and all other articles which are to be put away when the season is over. They should then be sprinkled with pepper or camphor, and wrapped in a cloth which has been washed in lye water. Close the parcel carefully, and place in a chest into which some insect powder has been sprinkled. It is well to put away feathers in empty cigar boxes.

If one owns a cedar chest, or has closets which are wainscoted with cedar, it is sufficient to hang up the articles after having well brushed and shaken them.

Other methods may be employed to get rid of moths. A liquor of one quart of alcohol and the same quantity of essence of turpentine, and sixty-five grammes of camphor, is sometimes used. This should be kept in an earthenware jug, and well shaken before using. When the winter garments are put away, soak pieces of blotting paper in the liquid, and scatter among the furs and flannels, which should be rolled up in white cloths. Place one layer at the bottom, one above the article, and one at each side.

If one has no such chest, then, after having shaken and brushed the articles, fold them separately in linen paper, sprinkle with pepper and camphor, roll each parcel in newspaper, do the package up in white cloth, and hang in a closet or dark room.

Clean furs by rubbing them against the grain with heated bran. Use magnesia for white furs.

Cleaning of Lace.

Fine laces should be washed as seldom as possible; but when it is necessary, most women prefer to have them washed under their own eyes. Make hot soap suds with rain water and glycerine soap. The laces, after having been rolled on a glass bottle under a band of linen, must be put in the suds and remain there for twelve hours. Renew the soap suds three times, plunge the bottle into soft and clear water, and take it out immediately. The soap which remains serves to give some stifiness to the lace when pressed by a hot iron. Pin each point down under a fine muslin, and iron on the wrong side. When all is finished, raise each flower by a suitable pointed instrument.

Laces may be bleached by being exposed to the sunlight in soap suds. The points are afterward dried on a cloth to which they are pinned. They are then rubbed carefully

by the aid of a sponge dipped in soap suds of glycerine soap. First clean one side, and then the other. Rinse in clear water, in which a little alum is dissolved, to remove the soap.

A little rice water should be passed over the wrong side of the lace with a sponge; then it is to be ironed, and when finished the flowers should be picked out as in the above method. If the lace is not very much soiled, it can be cleaned with bread crumbs.

As for cream-colored laces, they should be boiled for one hour in soapy bluing water, then taken out and the operation repeated twice, always in fresh water. The third time there should be no bluing in the water, and it should not be rinsed. The lace should afterward be put in gum water, with a little brandy and alum dissolved in it. Then powder lightly with sulphur flour and iron while damp.

Valenciennes should be folded together in a regular length, sewed in a sack of fine white linen, and soaked in olive oil for twelve hours. Afterward put some sliced pure soap in water and boil the sack containing the lace for fifteen minutes. Rinse well, dip in a thin rice water, then rip open the sack and pin down the lace to dry. Iron it under a muslin cloth.

Black laces should also be folded in a short package and kept in place by stitching at the top, in the middle, and at the bottom. Dip the lace in beer and roll it with the hands, not rubbing too much to clean it. When it is taken out of the beer, press it between the hands without wringing, then roll it in a cloth. Iron it after it has been partly dried, according to the desired stiffness. To iron it, stretch it on a thick flannel, and let it remain there. Cover it with a thin piece of muslin to prevent the iron from making it glossy.

When gowns trimmed with lace are put away, cover the lace with silver paper.

To cleanse silver laces and braids, put them in a sack of white linen, which dip into one pint of water, adding sixty grams of soap. Boil well, and rinse in cold water. Apply a little spirits of wine to the tarnished places.

H. C. Pros.

Cleaning Woolen Goods.

Clean rose-colored cashmere by washing in cold soapsuds. If you attempt to put dye in the water, the material will be spoiled. Rinse well in cold water, and dry in the shade.

To clean white serge, use a decoction of soapwort roots. The gown when washed will be white and soft to the touch. Soap hardens stuff goods, and makes them yellow.

Knitted or crocheted garments should be washed in the following manner: cut one pound of soap in thin slices, and melt in a little water until it has the consistency of jelly. When the preparation has cooled, beat it up with the hand, and add three spoonfuls of grated stag's horn. Wash the whole material in this mixture, and rinse well in cold water. If necessary, dip the articles a second time in salt water to fix the color. Place before the fire; stir frequently in order to let the dampness evaporate; be sure not to stretch the articles out to dry.

To clean a faded black cashmere, rub it width by width with a sponge soaked in a solution of alcohol and ammonia, equal parts, diluted with hot water.

Wash merinos and cashmeres in warm water into which Irish potatoes have been scraped. Rinse in good soft water. These materials should not be wrung out. They should be spread smoothly on a line where they may drip, and should be allowed to become partly dry before ironing.

Black merinos, cloaks, gentlemen's clothes, or woolen goods generally, may be cleaned with carbonate of ammonia, which must be poured into boiling water and allowed to become cold. Meanwhile, brush the stuff thoroughly with a hard brush, laying it upon a large newspaper, and brushing both sides, where possible.

Then take a large piece of black cloth or other material, dip it into the liquid, and wash the stuff well. If the fabric be cloth, care must be taken to wash it the *right way*, so as to keep it *smooth*. When washed, fold the material in half, and place it in a clean towel, laying one piece over the other in case the garment has been taken to pieces. Iron the *wrong side*, laying the stuff on a thickly folded blanket or sheet, with a thin sheet of paper, or other thin material, over

the blanket or sheet. Iron each piece on the wrong side until quite dry. Then fold the pieces, but be careful not to fold so as to crease them, especially cloth. Gentlemen's clothes can be cleaned in this way without taking to pieces, or ironing, unless convenient. Vest and coat collars are easily renovated, and grease spots and white seams removed.

Colored Fabrics.

Nearly all colored fabrics stain the water used to clean them, and that without losing their own brightness in any way. No article of a different color should be plunged into a wash or rinse so stained, and no colored article should be rinsed in a blued lather. Scarlet is particularly likely to color wash water.

Colors are often improved by the use of certain substances in the wash or rinse. Sugar of lead has the credit of fixing all colors when first cleaned, and may be used with those likely to run. To brighten colors, mix some ox-gall with the water. Of course the quantity must be regulated by the quantity of suds in the wash and rinse. For buff and cream-colored alpaca or cashmere, mix in the wash and rinse a small quantity of friar's balsam for one skirt. For a dress of black materials, use a little ammonia in the wash and rinse. For violet, also put ammonia, or a small quantity of soda, in the rinsing water; but it must be borne in mind that some violets and mauves fade in soda. For green, use vinegar in the rinse, in the proportion of two tablespoonfuls of vinegar to a quart of rinse. For blue, to one dress, put a good handful of common salt in the rinse. For brown and gray, use ox-gall. For white, blue the water with laundry blue.

Blankets may be similarly dealt with. Pull them out well, while wet, in both directions, two persons pulling. When half dry it is a good plan to take them off the line and pull them again; and when quite dry, give them a little more pulling out. This keeps them open and soft. Never use soda to them, and never rinse them in plain water or rub on soap.

Flannels.

It is very important, in washing flannels to prevent shrinkage. The articles should be *washed* and *rinsed* in water of the same temperature, and not allowed to cool between. Do not rub soap on the goods. Use a strong suds, about as hot as the hands can bear; rub through two soapy waters; wring out and rinse in plenty of warm, clean water; then in another water of same temperature, blued a little. Wring, shake well, and hang up, but not in a freezing air; better dry them in the house, unless a warm sun is shining. Flannels should dry quickly.

Colored flannels should not be washed in the water after white clothes, or when dry they will be found covered with lint; they had better be washed in a separate water. Blue flannel requires bran water without soap. When rinsing, throw a handful of salt in the water to preserve the color. Flannels that have become yellow from bad washing, may be whitened by soaking them in a lather made of a quarter pound of soft soap, two tablespoonfuls of powdered borax, and the same quantity of carbonate of ammonia, dissolved in five or six gallons of water.

Care of Muslins

Muslin dresses, even of the most delicate colors, can be cleaned in ten minutes or a quarter of an hour, without losing their color. Melt half a pound of soap in a gallon of water; empty this into a washing tub; place nearby two other large tubs of clean water, and stir in one a quart of bran. Put the muslin in the soap, turn it over, and knead it for a few minutes; squeeze it out well, and rinse for some minutes in the bran, and for two minutes more in clear water. Then hang between two lines. In the case of a colored pattern on a white ground do not use blue.

In starching colored muslins use white starch, made with boiling water. Dip the dress in this, and, after drying, rinse quickly in clean water. Sprinkle and roll, and afterwards iron with very hot irons.

For white muslins, lace curtains, etc., proceed as above, but use blue in the starch.

SPECIAL DECORATIONS

The table is prepared for a special occasion and profusely decorated with flags, potted plants and vines. This answers for all patriotic occasions. At the right is a beautiful window box and hanging basket.

TABLE DECORATIONS

A happy suggestion for the arrangement and decoration of a dinner-table for a special occasion, such as a wedding dinner. The contrast of light draperies on the walls and the green of the plants is very effective.

Morning cambric dresses may be cleaned in the same way as muslins, but may need some rubbing. Chintz may be cleaned in the same manner.

There are certain advantages in this process, which is so rapid that the colors have not time to run, the fabric is not rubbed or strained, and the work is done so quickly as greatly to reduce the labor involved.

Silks.

Lay the silk smoothly on a clean board, rub soap upon it, and wipe it with a piece of velvet. Never brush it; the brush ruins it. When it has been in this manner cleansed from grease and dirt, it should be washed on both sides with clean cold water. A little alum in this water will prevent the colors from spreading. Should there be any patches of grease upon the silk, they should be removed with ammonia or a little camphine and alcohol. Folding or wringing silk when wet must be carefully avoided, since creases made in wet silk never disappear; and, in like manner, *hot suds* must not be used for washing silk, as it will in most instances remove the colors.

Silks are easily cleaned if one knows how to work carefully. Mix the following well together: Fifty grams of honey, as much soft soap, one gill of brandy. Rip the gown, place in cold water, spread on a table, and rub well with a brush dipped in the mixture. Rinse three times in a pail of water, into which sixty-five grams of gum have been dissolved. Let the garment drip without being wrung, and iron on the wrong side.

Another recipe: Grate five Irish potatoes in clear cold water. If the silk is thin, slice the potatoes instead of grating. Wash them well before grating or slicing. Let the prepared water stand for twenty-four hours before using. Then strain the liquid. Dip the silk in without rumpling it; spread it on a table, wipe both sides with a clean towel, and iron on the wrong side.

Grease stains may be removed either with chalk, magnesia, or ether, or with the yolk of an egg and water. Clean white brocaded silk with bread crumbs. Plain silk requires the following process: Dissolve soft soap in water as hot as the hands can bear; rub the silk between the hands in the soapy water; rinse in warm water, and dry by pinning on a cloth.

Nothing is so good for black silk, and, in fact, for many materials, as beef gall. Throw the gall-bladder into as much boiling water as you care to use. Spread the material on a table, and with a sponge dipped in the liquid clean the silk on both sides. Rinse in clear water, still on the table, on both sides with a sponge. Dissolve a little gum arabic or gelatine in the water, moisten the sponge with it, and pass it over the wrong side of the silk. Pin the silk on a cloth to dry it.

A good way of removing grease stains from black silk is to rub them very vigorously with a piece of brown wrapping paper.

Velvets.

Velvet garments which have been stained, or worn, or have grown glossy, may be renovated so as to look new. The garment must, of course, be ripped, breadth by breadth, piece by piece. Then put burning coals in a chafing dish, and place on this dish a platter of thick brass. When it is very hot, cover it with a thickly folded cloth dampened in boiling water. Spread on this cloth the velvet, wrong side out. Do not be frightened if you see a black vapor arise. Pass a brush very lightly over the velvet. Let it dry stretched smoothly on a table.

When the velvet has been crushed, turn it wrong side out, and hold it above boiling water, exposed to the vapor. Brush it against the grain.

Before putting away gowns, mantles, plush or velvet jackets, the dust should be removed. To do this, spread some fine white sand over the material. Brush it until the last grain of sand has disappeared. If mud stains are on the garment, dilute beef gall and a little spirits of wine in boiling water. Wet a soft brush in the mixture, and rub the stain, repeating as often as necessary. Apply to the back of the material a thin solution of gum.

Veils, Hats, Etc.

Wash faded ribbons in cold soapsuds. Rinse, shake out, spread on the ironing-board, and cover with muslin, ironing while damp.

Women in mourning frequently discard long crape veils and trimmings, not because they are ruined by the rain, but because they do not know how to care properly for this material when it is wet. It should be dried immediately, spreading it out, but not near the fire. If it is stained with mud, clean it with cold water, and dry away from the fire, air, and sunshine. English crape, when it has become limp, should be dampened with brandy, then rolled on a roller. Moisten it at each turn, and evenly throughout. Milk may also be used to dampen crape and to restore its color, but the crape should be carefully sponged afterward with water.

Black thread stockings may be washed as follows: Never use soap, but a suds made of a teacupful of bran inclosed in a muslin bag, thrown into warm water, and well stirred. First wash the stockings in this preparation. On taking them out of the water, roll them in a towel, pressing strongly, and dry quickly near the fire, not in the air.

If this precaution be taken, the stockings will retain a fine black color, and never grow dingy. If they are neglected and become rusty, the color can be restored by boiling them in one quart of water, into which a few chips of logwood have been thrown.

Felt hats which have been wet should be brushed before drying. Rip off the trimmings; begin brushing at the border, and continue turning, always on the same side, until the center is reached at the very top. Place the hat on a mold and let it dry before putting it away. It will be as fine and beautiful as when new.

In putting gowns away for the season, wrap them in blue paper tightly sealed. White silk skirts should be placed in a second covering of muslin, and the bodices put away in cases or boxes. Fold the trains their full length.

To cleanse the collars of garments, dissolve one part salt in four of alcohol. Apply with a sponge and rub well.

Cloth, serge, felt hats, may all be cleansed by dipping a hard brush, which has short hairs, into spirits of ammonia. Rub until the grease spots disappear.

Laundry Work.

In washing clothes, dissolve pipe-clay in the water, a cent's worth to four gallons. It will be found to clean clothing with half the labor, and considerably less soap, while the colors of the clothes are improved. Petroleum dissolved in the water is also of great utility, saving much of the labor and soap and yielding superior results.

Chintzes should always be washed when the weather is dry and sufficiently warm not to freeze them. If necessary to wash them in wet or very cold weather, it is better to dry by the kitchen fire than to run the risk of spoiling the colors by outdoor drying.

To Wash Chenille Curtains.—Two ounces ether sulphate, two ounces borax, two ounces soda, one cake ivory soap; shave soap and let dissolve in warm water, then add all the ingredients to sufficient warm water to wash curtains in. Do not rub on board, but dash up and down until they are thoroughly clean. Do not wring them, but squeeze out of the water, and hang lengthwise in a shady place. Then take a whisk broom and brush until dry. Do not go near the fire, as ether is a dangerous explosive.

To Clean Kid Gloves and Shoes.—An easy way to perform this is to stretch the glove in some way as on the open hand, and rub it carefully with moistened flannel, having first placed a little powdered soap on the flannel. After the dirt has been thus removed, the glove should be dried by rubbing with dry flannel.

To clean ladies' kid boots, dip a rag in almond oil and remove all the mud, drying as you go, and never leaving the leather moist. Polish with a clean rag and more oil. The dulness left by this process may be removed by rubbing with the palm of the hand. Kid may be both cleaned and preserved in this manner.

The Removal of Stains.

Ink stains on woolen goods and cloth may be removed with oxalic acid, diluted, or rubbed over with strong vinegar, so that it may not injure the stuff. This acid has, however, the disadvantage of being very

poisonous, and must be used with caution. Citric and tartaric acids, which are harmless, and answer the purpose as well, are to be preferred, especially as they may be used on the most delicate fabrics without any danger of injuring them. They may also be employed to remove marks of ink from books, as they do not injure printing-ink, into the composition of which iron does not enter.

Lemon juice, milk, the juice of ripe tomatoes, etc., are good for ink stains on white goods. If the ink be spilt on a carpet or table cover, the stain should immediately be rubbed with a moistened cloth, the rubbing being continued over and beyond the stain until the ink marks have disappeared. If this be done very promptly, the stain may be entirely removed. The work may be completed with a second wet cloth.

In case the color of the material is destroyed by an acid used in removing ink stains, or through accident, it may be restored by rubbing the spot with ammonia. In the case of varnish or paint stains, rub with benzine or turpentine. If the stain is old use chloroform, but be very careful in its use. To remove blood stains, saturate with petroleum and wash in hot water. Grease spots from dripping candles may be removed with cologne water.

Grease spots are the most disagreeable stains. They always spread, and are more offensive than others. Fortunately, there are many ways for getting rid of them.

Before attempting to remove stains from woolen goods, place on them a piece of absorbent paper, pass a hot iron over it, and then use ammonia and soapsuds. Chloroform is successfully used, and also a mixture of alcohol and ammonia. These spots may be also dampened with ammonia water, and ironed under a piece of white paper.

Rub the stain with chalk on the wrong side of the cloth, allowing it to remain on all day. Many persons keep the following preparation to remove stains whenever needed: Make a stiff paste of Fuller's earth and vinegar. Roll into a ball and dry it. To use it scrape the ball on the stain, which must first be moistened; allow it to dry, and then remove the stain with warm water.

Here are three formulæ for removing stains:

First. Essence of turpentine, very pure, twenty-six grams; alcohol at forty degrees, thirty-one grams; sulphuric ether, thirty-one grams; pour into the bottle, cork, and shake well. To use the mixture, place the material to be cleaned on a piece of thickly folded white cloth. Wet the stain thoroughly with the preparation, and rub lightly with a fine cloth. If the stain is an old one, warm the material.

Second. Mix ammonia and ether and alcohol, in equal parts, thoroughly; place on the stain a piece of blotting-paper; moisten with a sponge dipped in water, to make it more absorbent; wet it with the mixture, and rub the stain. It will disappear in an instant.

The following will remove a stain of any kind: Pour into a large-necked bottle two quarts of pure spring water; add a lump of ashes of old lees of wine, about the size of a nut, a lump of potash, two sliced lemons. Allow this to stand for twenty-four hours. Filter the liquid, and keep in well-corked bottles. When you wish to remove the stain, wet it with the preparation, then rub the spot with fresh water.

Marble and Furniture Polish.

A good marble polish is the following: Melt over a slow fire four ounces of white wax, and, while still warm, stir into it an equal weight of oil of turpentine. When these are fully combined, put the compound into a bottle or other vessel, which must be kept well corked when not in use. A little of the above put upon a piece of flannel and well rubbed upon the marble will bring the surface to a fine polish.

To polish furniture, prepare white wax and oil of turpentine as above directed. A small quantity applied with flannel or other woolen cloth, and well rubbed in, is excellent for mahogany and walnut. If a yellowish tint is desired for light-colored wood, put into the turpentine in advance a small quantity of quercitron, or dyer's oak, and let stand for two days. To give a reddish tinge, a little alkanet may be used in the same manner as the quercitron.

For another furniture polish take one a half ounces each of alcohol and butter of antimony, one-half ounce of muriatic acid, eight ounces of linseed oil, one-half pint of cider vinegar; mix these cold and apply with Canton flannel, then rub with dry Canton flannel.

Recipes for Cleaning.

Steps and Flag-stones.—Where there are large flights of stone steps and broad pavements of flag-stones, the process of cleaning is a tedious one. To clean with hearthstone, or caked whiting, as usual, gives a smeary appearance, and washes off with the first shower. The following preparation is preferable alike for its appearance and as a labor-saving appliance, as it need be used but twice a week, washing being sufficient for the remaining days: Take a gallon of water, and color with stone-blue to a deep tint. Boil in this a pound of white size, and dissolve in the mixture a quarter pound of whiting and three cakes of pipe-clay, stirring well. Wash the steps rapidly with this solution, and finish with clean water in the usual way.

Damp Walls.—Damp walls may be dealt with in the following manner: Mix two quarts of tar with two ounces of kitchen fat, and boil together for a quarter of an hour. Then add some slaked lime and very finely pounded glass. The lime and glass must be in the proportion of two to one, and thoroughly mixed. Apply immediately, as the mixture soon sets and becomes hard. A coat an inch thick will usually quite overcome the dampness, though in extreme cases two coats may be necessary.

To Clean Soiled or Stained Furniture.—Use spirits of turpentine, and afterwards polish with linseed oil colored with alkanet root. If, however, the furniture is badly stained or inky, it should be washed with sour beer or vinegar, warm. Afterwards rub the stains with spirit of salts, which will remove them. The wood may then be polished, with linseed oil colored with alkanet root, or with beeswax, dissolved in turpentine, with a little copal varnish or resin added.

New mahogany may be given the dark tint of old by washing with various substances. Soap and water will darken somewhat, but oil is more efficacious; if a very dark tint is desired use lime water.

Paint may be cleaned with the following preparation: Mix one pound of soft soap, two ounces of pearlash, one pint of sand and one of table beer. Let these simmer together till fully incorporated, and use the mixture in the manner of soap.

Another cleaning mixture may be made by grating four potatoes to a pulp and mixing with a quart of water. After stirring, let the pulp settle and pour off the water. This must be applied with a sponge.

To Clean Decanters and Water-bottles.

When these, from containing hard water for a considerable time, have become coated in the interior with a deposit of carbonate of lime and other impurities, the easiest way is to use about a teaspoonful of hydrochloric acid, rinsing the bottle with it. It will be found that the instant the acid comes in contact with the deposit it removes it, a clear solution of chloride of calcium being formed. The bottle should then be rinsed in plenty of clean water. After a decanter has held port or other wines for a long period, a deposit of coloring matter will cover the interior surface of the glass. This may be easily cleaned off by a little sulphuric acid, in the manner above described.

Cleaning Copper Utensils.—These can be given a clean, bright surface by the use of nitric acid. The desired surface is thus obtained quickly and with little trouble. But there is the objection that a considerable quantity of nitrous fumes are given off, and these red vapors are at once extremely disagreeable, and very prejudicial to health. Their production may be prevented by adding a little solution of bichromate of potash to the dilute nitric acid. This is found to answer perfectly, the copper surface being made clean and bright, without disengagement of vapors.

To Clean and Brighten Brussels Carpets.—Take a fresh beef-gall, break it into a clean pan; pour one-half into a very clean bucket, and nearly fill it with lukewarm water; take a clean, coarse cloth, and, having brushed the carpet well, rub it hard with the cloth thoroughly wet with gall-water; do a small piece at a time; have ready a dry coarse cloth, and rub the carpet dry; so proceed until the whole carpet is cleaned. A few drops of carbonate of ammonia, in a small quantity of warm rain-

water, will change, if carefully applied, discolored spots upon carpets, and indeed all spots, whether produced by acids or alkalies. If one has the misfortune to have a carpet injured by whitewash, this will immediately restore it.

Another recipe for cleaning carpets is two and one-half bars Ivory soap, one half-pound powdered borax, one-fourth ounce glycerine; shave soap fine, put in four gallons soft water; heat till dissolved, then let cool enough to use.

Grease on a carpet, if not of long-standing, can be readily disposed of by washing the spot with hot soapsuds and borax—half an ounce of borax to a gallon of water. Use a clean cloth to wash it with, rinse in warm water, and wipe dry.

To Clean Paper-Hangings. Take small pieces of stale bread, about two days old, commence at the top of the room, and with the crust wipe lightly downward about half a yard at each stroke, till the upper part of the hangings is completely cleaned all around, and so continue until the whole is gone over. This operation, if carefully performed, will frequently make old paper look almost equal to new. Great caution must be used not to rub the paper hard, nor to attempt cleaning it the cross or horizontal way. The dirty part of the bread must each time be cut away, and the piece renewed as often as necessary.

To Extract Grease from Papered Walls.—Dip a piece of flannel in spirits of wine, rub the greasy spots gently once or twice, and the grease will disappear.

Oil-Marks on wall-paper, or the marks where inconsiderate people rest their heads, are a sore grief to good housekeepers, but they can be removed without much trouble. Take pipe-clay or fuller's earth and make it into a paste about as thick as rich cream with cold water; lay it on the stain gently, without rubbing it in; leave it on all night. It will be dry by morning, when it can be brushed off, and, unless an old stain, the grease-spots will have disappeared. If old, renew the application.

To Remove Stains in Tables.—Wash the surface with stale beer or vinegar; the stains may then be removed by rubbing them with a rag dipped in spirits of salts. To repolish, proceed as you would do with new work. If the work be not stained, wash the surface with clean spirits of turpentine, and repolish it with furniture oil.

To Clean Paint, smear it over with whiting mixed to the consistency of common paste in warm water. Rub the surface to be cleaned briskly, and wash off with pure, cold water. Grease spots will in this way be almost instantly removed, as well as other filth, and the paint will retain its brilliancy and beauty unimpaired.

Removal of Dry Putty.—The difficulty of removing hard putty from a window-sash can be obviated with great readiness by simply applying a piece of heated metal, such as a soldering-iron or other similar implement. When heated (but not red hot), the iron is to be passed slowly over the putty, thereby rendering the latter so soft that it can be cut or scraped off without difficulty.

To Clean Straw Matting.—Wash as seldom as possible, but when it is necessary to do so use salt and water. Salt prevents the matting from turning yellow. Dry as fast as you wash, and wash but a little at a time.

To Remove Mold from Fabrics.—Rub them over with butter, and then apply potash moistened in a little water, and rub the spot until all traces of it disappear; then wash in plenty of water to take out the potash; or the moldy spot may be wetted with yellow sulphide of ammonia, by which it will be immediately blackened. After a couple of minutes wash it off, and remove the black stain with cold, weak chlorohydric acid; then wash well with warmish water.

Cleansing Picture Frames.—Black walnut frames will become dull and rusty-looking. They may be renewed by first brushing thoroughly with a stiff brush to remove dust, and then applying pure linseed oil with a proper brush; in the absence of a brush, a piece of new bleached muslin will answer the purpose.

To Clean Mirrors, Looking-Glasses, Etc.—Take a soft sponge, wash it well in clean water, and squeeze it as dry as

possible; dip it into some spirits of wine and rub over the glass; then have some powder-blue tied up in a rag, dust it over your glass, and rub it lightly and quickly with a soft cloth; afterward finish with a silk handkerchief.

To Take Stains Out of Marble.—Mix unslaked lime in finest powder with the strongest soap-lye, pretty thick, and instantly with a painter's brush lay it on the whole of the marble. In two months' time wash it off perfectly clean; then have ready a fine thick lather of soft soap, boiled in soft water; dip a brush in it and scour the marble. This will, with very good rubbing, give a beautiful polish.

To Take Iron Stains Out of Marble.—An equal quantity of fresh spirits of vitriol and lemon-juice being mixed in a bottle, shake it well; wet the spots, and in a few minutes rub with soft linen till they disappear.

Marble can be nicely cleaned in the following manner: Pulverize a little bluestone, and mix with four ounces of whiting; add to these four ounces of soft soap and one ounce of soda, dissolved in a very little water. Boil this preparation over a slow fire fifteen minutes, stirring all the time. Lay it on the marble while hot with a clean brush. Let it remain half an hour; then wash off in clean suds, wipe dry, and polish by quick rubbing. If marble is smoked or soiled, either by bituminous coal or too free use of kindling wood, Spanish whiting with a piece of washing soda, rubbed together and wet with only enough water to moisten and make them into a paste, will remove the grease and smoke. Dip a piece of flannel in this preparation and rub the spots while the paste is quite moist. Leave the paste on for hours, and, if need be, remove it and renew with fresh paste. When the spots disappear, wash the place with clean hot soapsuds, wipe dry, and polish with chamois skin.

To Take Bruises Out of Furniture.—Wet the part with warm water; double a piece of brown paper five or six times, soak it and lay it on the place; apply on that a hot flat-iron till the moisture is evaporated. If the bruise be not gone, repeat the process. After two or three applications the dent or bruise will be raised level with the surface.

Lamp-Chimneys can be prevented from cracking, when exposed to the burning flame, by first placing them in a vessel of cold water and bringing this to a boil over the fire, then removing the vessel and allowing it to cool before taking out the cylinder.

To Remove Glass Stoppers.—When the stopper of a glass decanter is too tight, a cloth wet with hot water and applied to the neck will cause the glass to expand, and the stopper may be removed. In a phial the warmth of the finger may be sufficient.

Household Pests.

To Destroy Crickets or Roaches.—Put some strong snuff in the cracks and holes in which they hide. The parings of cucumbers will, if strewn about near their holes, drive them away. Roaches devour greedily flour paste, and die while eating it, if into half a pint of it, while hot, a dime's worth of phosphorus is stirred with a stick.

To Destroy Flies.—Take strong green tea, sweetened well, and set in saucers about the places where they are most numerous. To destroy them in this way is preferable to the use of fly-papers, which catch the insects alive, and cause them to die a slow death.

Rat Poison.—A tasteless, odorless, and infallible rat poison is made as follows: Mix carbonate of barytes, two ounces, with grease, one pound. It produces great thirst, consequently water must be set by it, for death takes place immediately after drinking, not giving them time to go back to their holes. Be sure no other animal can get at it, except rats and mice, for it is a most deadly poison.

Persian Insect Powder is an unfailing bed-bug poison. It is not poisonous, but none the less is sure death to all insects. It is blown with an insect gun into all cracks, crevices, and places where bugs can find an entrance. This has been tried and found to be efficacious in hundreds of instances. To wash bedsteads with coal oil will also clear them of bugs.

To Get Rid of Ants.—Wash your shelves down clean, and while damp rub fine salt

on them quite thick; let it remain on them for some time, and red ants will disappear.

Another remedy for ants may be made of half a pound flour of sulphur and four ounces potash. Put them over the fire in an earthen pan till they dissolve and unite. When cold, beat them to a powder, put a little of this into water, and sprinkle the infested places. The ants will leave.

An Insect Remedy.—Dissolve two ounces of alum in three or four quarts of water, letting it remain over night, until the alum is thoroughly dissolved. Then apply it, boiling hot, with a brush, to every joint or crevice that is infested by ants, roaches, bed-bugs, etc. Brush all the cracks in the floor and mop-boards. Keep it boiling hot while using.

Rats and Mosquitoes.—A bottle of the oil of pennyroyal, left uncorked in a room at night, will dispose of mosquitoes. Not one will be found in the morning. Rats may be dealt with by mixing potash with meal and throwing it into their holes. If a rat or a mouse gets into the pantry, stuff into its hole a rag saturated with cayenne pepper. That pathway to the pantry will be deserted.

Other Recipes.

A Simple Disinfectant.—Put into a saucer some fresh-ground coffee, and in its centre place a small piece of gum camphor, which set on fire with a match. As it burns add coffee enough to burn with it. It gives a very pleasant perfume, much more agreeable than that of pastiles, and it is much cheaper.

Glass and China Cement.—Curdle a half pint of milk with the same quantity of vinegar; separate the curd from the whey, and mix the latter with the whites of four or five eggs, beating them well together. Add a little quicklime, through a sieve, to make a thick paste. This cement dries quickly and resists the action of fire and water.

Another cement may be made by stirring plaster of Paris into a thick solution of gum arabic, bringing it to the consistency of cream. This is white in color and is very well adapted to mend china. After three days it cannot be broken in the same place.

Still another is made of four ounces of crushed orange-shellac, and three of strong rectified spirits of wine or wood naphtha. The spirits of wine is preferable. Dissolve the shellac in the spirits, in a corked bottle kept in a warm place. The process is aided by shaking, and the composition must be shaken before using. It can be used as a varnish for unpainted wood.

To mend glassware, dissolve boiled isinglass in spirits of wine, half the quantity of spirits being added to the isinglass. This is a transparent cement, which makes it very suitable for mending glassware.

Cracks in Floors.—These may be filled neatly and permanently by thoroughly soaking newspapers in paste made of half a pound of flour, three quarts of water and half a pound of alum. The mixture will be about as thick as putty. It can be forced into the cracks with a case-knife, and smoothed on top. It will harden like papier-maché.

Cracks in Plaster.—A good filling is plaster of Paris mixed with vinegar, which will not set for twenty or thirty minutes, while water will set very quickly, often before you can use it. The putty-like mass must be pushed into the cracks, and can be smoothed off evenly with a table-knife.

To Prevent Mold.—Add to paste, ink, mucilage, or other substance liable to mold, a little carbolic acid. An ounce of this acid to a gallon of whitewash will keep cellars and dairies from the disagreeable odor which is apt to taint milk or meat in such places.

To preserve glasses of jelly from mold, lay on the top of the jelly a piece of paraffine, and let it melt and spread over it. Or the paraffine can be melted and poured over the jelly when cold. This renders unnecessary brandy-paper or other covering.

Spots on Furniture and Fabrics.—These may be removed by a wash of four ounces of ammonia, one ounce each of glycerine, castile soap, and spirits of wine. The soap must be dissolved in two quarts of warm water, and the other ingredients added. Apply with a soft sponge. This wash is very good for silks.

Another furniture wash may be made by mixing a half pint of 95 per cent. alcohol, a quarter ounce each of powdered resin and gum shellac, and a half pint of linseed oil. Shake these well together and apply with a brush or sponge to stains, spots, or mildew.

To Freshen Gilt Frames.—Dust carefully, then wash with one ounce of soda beaten up with the whites of three eggs. Where scratched, patch up with gold paint. To clean oil paintings use castile soap and water, very carefully applied.

Gilt may also be brightened by adding to a pint or two of water sufficient flour of sulphur to give it a golden tinge. In this boil four or five onions, or a quantity of garlic. Strain off the liquid, and wash the gilding with a soft brush. When dry it will look like new work.

To Take Out Paint.—Mix ammonia and turpentine in equal parts, saturate the spot two or three times, and wash out with soapsuds. This will take out paint from clothing even if dry and hard. Paint spots on window glass can be removed with ten cents' worth of oxalic acid dissolved in a pint of hot water. While applying it to the spots, take care that the acid does not touch the hands. Brasses may be quickly cleaned with this wash; but it must not be kept after using, as it is a deadly poison.

BRIEF RECIPES FOR HOUSEKEEPERS

A little quicklime placed in the infested places will drive away any kind of ants.

Burning sulphur in a tightly-closed room will kill almost all kinds of insect life and their eggs and larvæ.

How to Make Leather Waterproof.—Saturate it with castor oil; to stop shoes squeaking, drive a peg into the middle of the sole.

How to Wash Colored Calicoes.—Dissolve 5 cents' worth of sugar of lead in 3 to 4 quarts of pure water (rain-water is best), and, after the garments are washed and rinsed, let them be dipped in and wrung out; it sets the color and keeps it.

How to Remove Tar from Cloth.—Rub it well with turpentine, and every trace of tar will be removed.

How to Set the Color in Lawn.—Dissolve a half-pound of saltpetre in a pailful of water, and dip the lawn in it several times before washing.

How to Remove Egg Stains from Spoons.—Rub with common salt.

How to Remove the Stains of Fruit from the Hands.—Wash your hands in clear water, dry slightly, and while yet moist, strike a sulphur match and hold your hands around the flame. The stains will immediately disappear.

How to Clean Furniture.—Rub with cotton waste, dipped in boiled linseed oil; then rub clean and dry with a soft flannel cloth.

How to Test whether an Article is Gilt or Made of a Gold-colored Alloy.—A solution of bichloride of copper makes a brown spot on alloy, but produces no effect on a surface of gold.

How to Restore Gilt Frames.—Rub with a sponge moistened in turpentine.

How to Clean Gloves.—Pour a little benzine into a basin and wash the gloves in it, rubbing and squeezing them until clean. If much soiled, they must be washed through clean benzine, and rinsed in a fresh supply. Hang up in the air to dry.

How to Clean Hair Brushes.—Dissolve a little soda in warm water, and pour in a small amount of ammonia. Hold the brushes with the bristles downward, and avoid wetting the back as far as possible; shake until the grease is removed. Then rinse in cold water, and put in the air to dry.

How to Clean Hair.—Wash well with a mixture of soft water, 1 pint; sal-soda, 1 ounce; cream tartar, ¼ ounce.

How to Remove Stains from Linen.—Wet the part stained, and lay on it some salt of wormwood; then rub without diluting it with more water.

How to Remove Mildew from Cloth.—Put a teaspoonful of chloride of lime into a quart of water, strain it twice, then dip the mildewed places in this weak solution; lay in the sun. If the mildew has not disappeared when dry, repeat.

How to Cure Mosquito Bites.—Put 10 drops of refined carbolic acid into an ounce of rose water; shake well, and apply as needed. If you hold your breath when a mosquito has its bill in you it cannot withdraw it until you breathe again.

How to Remove Paint from Dress Goods.—When the color of a fabric has been destroyed by an acid, ammonia is applied to neutralize the same; after which an application of chloroform will, in almost all cases, restore the original color.

How to Color Dress Goods Red.—1 ounce of cochineal, 1 ounce of muriate of tin, and a little cream of tartar for each pound of goods, dissolved in enough water to cover them. Boil the goods in this dye 10 minutes. Hang up to dry.

How to Remove a Rusty Screw.—Apply a red-hot iron to the head for a short time, the screw-driver being applied immediately while the screw is hot.

How to Prevent Starch from Souring when Boiled.—Add a little sulphate of copper.

ATTRACTIVE HOME DECORATIONS

SOME COMMON THINGS MADE BEAUTIFUL—CHEAP AND EASY METHODS FOR HOME USE

The growing love for artistically attractive rooms, in cases where the purse does not permit free application to the upholsterer or the domestic art establishment, leads to many ingenious devices to bring beauty out of homeliness, and to produce both from cast-off and useless lumber, and material of more value, articles of ornament for parlor or chamber; while the skill in knitting, crocheting, and other arts of the fingers possessed by many ladies aids immensely in converting homely rooms into charming and attractive ones. It is proposed here to give some examples of decorations both of the homely and the more expensive order, which may serve as useful suggestions for many other articles made from materials in the possession of our readers, or in accordance with their tastes and the means at their command.

A Rustic Rug.—Even such homely stuff as the coarse material of a coffee bag, or coarse sacking of any description, may be made into an attractive rug in the manner here described:

Cut the stuff to the shape required. Then, having prepared strips of woolen material half an inch wide, darn them with a coarse needle in and out through the sacking, leaving between each strip loops an inch in height. The colors of the wool may be diversified according to taste. For instance, there may be a black border, with a centre of a single shade, or of a variety of bright colors.

After the work is ended, the whole surface may be clipped evenly. A very tasty rug can be made in this simple and easy manner.

A Simple Wardrobe.—A wardrobe of attractive appearance can be made by any one of ordinary ingenuity. To do so take two boards a foot wide and five feet high. Place these the distance apart desired for the width of the wardrobe, and connect them with similar boards top and bottom, making an improvised open framework. Casters should be placed in the four bottom corners, and brass rings screwed into each end of the top board.

Next prepare a pair of curtains sufficiently wide and long, hem the top, slip a brass wire through the hem, and pass the ends of the wires through the rings, letting the curtains fall to the floor. The sideboards of the wardrobe can be stained or treated in any way desired. Finally, wardrobe hooks can be procured and screwed into the upper board.

Bookcase.—A bookcase suitable for ordinary purposes may be improvised from an old bureau which has lost its mirror, by placing above it a set of shelves, made by two upright boards screwed to the sides of the bureau, and two or three cross ones. Paint and brass handles will serve to make the old bureau look new. By screwing brass rings into the ends of the top shelf and slipping a rod through them, curtains may be hung of any stuff preferred.

Mantelpiece.—Many houses still contain the high, old-fashioned, wooden mantelpieces, painted to imitate yellow-grained black marble, and a sore affliction to the eyes. A little paint may convert an eyesore into an ornament. In a chamber furnished with white and blue, a mantelpiece of this kind would be pretty painted white, with the panels outlined in blue. Shelves for books may be built above the mantel if desired and both mantel and shelves painted to match the woodwork of the room. In this manner a very unsightly mantel may be converted into a very pretty and attractive one.

Screen.—If your house is small and your family large, a folding-screen in each bedroom is an important addition. Very pretty and inexpensive ones may be made by covering a wooden frame with coarse canvas, burlap or cretonne, and staining the wood with a dark mission stain. For a child's room the screen may be varied by pasting on the covering pictures cut from illustrated papers. When the canvas is entirely covered varnish the whole, and be happy in the knowledge that you have added a useful article to your bedroom furniture, as well, perhaps, as provided hours of amusement for children in hunting out the various pictures.

Window Draperies.—Window curtains can make or mar a room, so it is of great importance to choose them wisely. The days of the old, elaborate lace curtains are vanishing, and with them much of the expense and difficulty of furnishing. Simple white or cream curtains of net, muslin or scrim are always in good taste, whether in a pretentious house or a small bungalow. These can be hemmed or hemstitched or finished with narrow lace or other edging. They are durable and easily laundered.

If desired, these simple curtains may be hung close to the window and colored draperies hung over them at the sides, with a valance over the top. Figured cretonnes are pretty for bedrooms, unless the paper be flowered. In that case a plain color is preferable. For living rooms, plain, dark colors are usually chosen—colors in harmony with the carpet and furniture. The materials vary from burlap to silk and velure.

Sofa Pillows.—Where there are easy chairs and couches, sofa pillows add much to the comfort of a room, and, rightly chosen, they may contribute to the beauty of the decorations also. Colors should be chosen in harmony with the scheme of the room. Embroidered pillows are less used than formerly, but some of these are still very beautiful. The tendency at present is toward plain colors or cretonnes or tapestries to match the draperies of the room. Ruffles and cords are little used.

Small pillows of dried rose leaves or pine needles smell very sweet. They are acceptable on any couch, and form pleasing gifts, especially to an invalid.

Floors.—The matter of floor coverings in any household is important, from the various standpoints of beauty, health, and labor. Happily the day of the carpet has been superseded by the day of the rug, with consequent gain from the sanitary viewpoint. The rug is easily swept or cleaned with the vacuum cleaner, and the bare edges of the floor kept spotless and shining by means of an oiled mop. Sweeping day need no longer be the horror it once was, and still the house may be cleaner.

In choosing a rug it is well to bear in mind the purpose for which it is intended and the amount of durability necessary. For bedrooms rag rugs in dainty colors are very attractive. These are easily shaken, and can, when soiled, be satisfactorily scrubbed or washed. Rugs for living and dining rooms are usually of wool, and are frequently made of carpet. Quiet colors, with few or no figures are the best to choose, as one soon tires of gay patterns. Either two tones of brown or two tones of green make an effective rug. One cannot go very far wrong in following nature's coloring of the earth or grass.

The kitchen floor may be stained or painted and left bare, except, perhaps, for a rag rug by the table in winter. Or it may be covered with oilcloth or linoleum and then varnished. The varnish will make the covering more durable.

Ornamentation of Bedrooms.

Where there are several bedrooms, it is not unusual to furnish each one in a color

of its own. One room, for instance, may be furnished in blue and white. The walls may be hung with satin striped paper, the draperies made of inexpensive materials, worked with ruffles and such designs as the occupant may desire, or as may please the designer. Another room may be furnished in pink and another in green, and so on. The proper arrangement of the draperies of the windows adds much to the effectiveness of the decorations. The bedroom should not be overcrowded with furniture, and each article should have a place where it can always be found.

Living-Rooms.

Upon the decoration and furnishing of the living-room depend much of the warmth, comfort, and pleasure to be obtained from it. The old-fashioned fire-place is again coming into vogue, as the warmth and light of a good wood or coal fire add greatly to the cheer of the home. The mantelpiece and surroundings should not be receptacles for odds and ends that may be placed there by various occupants of the room, but should be tastefully decorated with a mantel clock, vases of flowers or dried grasses, or one or two ornamental articles. Overcrowding should be avoided. On each side of the mantel should be hung suitable and suggestive pictures, neatly framed, always avoiding the cheap penny pictures, which do nothing more than encumber the walls. A few choice pictures are much more to be desired than many cheap prints. Books should be arranged on shelves, or in bookcases specially prepared for them. Care should be taken that they be properly arranged in such order as may be agreed upon, whether by titles or by sizes. Window draperies for the living-room should always be attractive and serviceable. There are several ways of hanging them; probably the most serviceable one is by rings from poles placed across the window.

The Convenient Kitchen.

The kitchen is the workshop of the home. It therefore should be furnished and arranged for the special convenience of the housewife and cook, and for the health of the occupants of the home. Plenty of light and air should be provided. At some time during the day it should have sunshine in abundance. In building a house it is more important to decide the location of the kitchen than that of the parlor. The sanitary arrangements include proper drainage, copious and clean supply of water, the best sanitary plumbing, generous room in the closets and pantries, and facilities for the proper care of cooking utensils. Kitchens should be made attractive as well as useful. This may be accomplished by giving attention to the hanging of simple curtains at the windows and over open cupboards; by the arrangement of dishes and utensils in the places where they belong; by tidiness in the furniture of the kitchen, and by general cleanliness. It is not customary to decorate the walls with pictures. The mantelpiece should have its clock and one or two suggestive ornaments.

Window Gardens.

Nothing adds so much cheer to the house as beautiful window gardens filled with flowers and potted plants. These decorations are within the reach of all, and there are many beautiful designs which will suggest themselves besides those we offer. One of the prettiest we have seen is a window garden occupying the south end of a dining-room, arranged with a wire stand in the centre. These stands are readily procured at almost any merchandise store, or they may be readily made out of light pieces of lumber in the form of steps, which, if neatly painted or stained, will be very serviceable. Window shelves may be made and covered with heavy paper or oil cloth of a neat figure. The plants may be so arranged as to give sunlight to the varieties needing it most.

Another very useful form is to make for the window garden a box, in length equal to the width of the window, six or eight inches wide and eight inches deep. The box should be lined with zinc and filled with sand or light mold. Not more than six or eight plants should be used in an ordinary window-garden box. In winter time the plants should be carefully protected at night from the frost caused by the falling of the temperature of the room. This may be

easily done by putting heavy paper between the plants and the window.

Decorations for Public and Festive Occasions.

It is desirable to decorate rooms for both public and private occasions, such as anniversary days and festal days. Decorations intended to instil patriotism are frequently used on Memorial Day, Washington's Birthday and the Fourth of July. The national flag is always a prominent feature. The platform, or stage, or the part of the room to be used for the entertainment, is made the centre of the decorations. Flowers, palms and vines are always beautiful, and their arrangement depends upon the taste of the persons directing the same. It must not be overlooked that even the most common flowers and plants form the prettiest decorations. Although the farmer may fight the daisy as a nuisance in the field, yet the decorator will find that it makes one of the most beautiful decorations, either bunched together or in chains, woven around walls and furniture.

Wedding Occasions.

No wedding would be complete unless there were decorations of the parlor or church where the marriage ceremony takes place, and also of the dining-room and table where the breakfast or dinner is served. There are many happy suggestions for such occasions. It is customary to decorate the church by running arches or bunches of flowers and vines, along the aisle through which the bridal procession passes. Festoons may be hung from the ceiling in artistic lines. Care should be taken that harmony in arrangement prevails, and one part is not decorated at the expense of another. Potted plants are always beautiful in decorating the platform and pulpit and for tables and window ledges. White ribbon, either in bows, or nicely looped, adds also to the effectiveness of the decorations.

Decorating the Table.

For bridal or festive occasions very simple and pretty decorations may be made by the arrangement of a few flowers on the table and good taste in arranging the china, the silver, and the linen. It should not be overlooked that too much decoration is worse than no decoration at all, and the effectiveness is often lost by carelessness in arranging one or two small items. Symmetry and harmony should not be lost sight of. The color effect should be left to persons who have "an eye for color."

The Boy's Room.

It is far better for the boy to spend his evenings in the house than upon the street and this he will be glad to do, provided his own room be made sufficiently attractive.

He will not be alone either, for with good books and games and a room of his own in which to play and store away his "traps," he will soon bring home with him other boys to share the good times. Every boy loves a chum.

The simpler the furnishings of the room, the better. Plain and substantial furniture are a matter of course. To these should be added shelves for books and magazines, cabinets or cupboards for collections, boxes for miscellaneous articles, a desk, and perhaps a work-bench. The energetic boy will wish to make some of the furniture for his own room.

The Girl's Room.

The girl's room is no less important than the boy's. She, too, will want a cosy and, of course, pretty place, where she can keep her treasures and invite her friends for an afternoon chat.

She, too, will need a desk, bookshelves and a cabinet for her collections, a place for her sewing, and perhaps a tea-table where she can make a cup of "something hot" for the friends who come. How better can she learn the beauty of orderliness and hospitality than in taking care of her own room and entertaining her friends?

Fancy Work for Leisure Hours.

In these days of household leisure taste in common art has developed, and we care much more than did our grandparents about surrounding ourselves with things of beauty. The struggle of life was harder for them, and they had little time to adorn tables,

arrange artistic effects in rooms, and make windows and walls rich with color and fair with soft drapery.

Embroidery.

Among the most popular home occupations for the present day may be named embroidery. The loom and the spinning-wheel, in one form or another, are as old as civilization, and our devotion to the embroidery frame is but a return to the occupation in which mediæval ladies found delight. Few of them could read or write, and the needle was their only form of expression. This is no longer the case; we are not so narrowed in our range, and yet embroidery continues to be pleasant work for a group of merry girls or thoughtful women.

Stitches.—Stem-stitch is not difficult. It is simply a long stitch forward, a short one backward, and then another long stitch a little in advance of the first. In working outlines, care must be taken to exactly follow the line of the pattern, and to keep the thread to the left of the needle. Some knowledge of drawing is necessary for good embroidery. Leaves and flowers or conventional designs should be nicely drawn or stamped before beginning to work. A lady is sometimes so deft with her needle that she can compose her pattern as she goes on, but this is not apt to be widely the case. The stem-stitch may be longer or shorter according to fancy, but it must be even.

Split-stitch is a variety of stem-stitch, but in bringing the needle up through the material it must be passed through the embroidery silk.

Satin-stitch is the same on both sides. The needle must be taken back each time to the point from which it started. Rope-stitch is a twisted chain-stitch; blanket-stitch is the ordinary buttonhole stitch less closely worked, and feather-stitch is a broken stitch, worked in a light airy way, to suit the convenience of the seamstress.

Drawn-work consists in drawing out threads from linen, and working designs in the drawn space or filling in with needlework. This is pretty for handkerchiefs, neckwear, waists, pillow-shams, spreads and curtains.

The embroiderer needs a smooth thimble, as a sharp one is likely to catch in her silk, a sharp and pointed pair of scissors, and a set of needles of different sizes.

Appliqué work is simply transferred work. Cut out pretty figures from damask or cretonne, or the best parts of old and worn embroideries, and fasten them securely on a foundation of lace, linen, or silk.

Cross stitch, recently revived, has brought in many new methods of decoration. It is best worked on coarse material, such as huck-a-back, and is widely used for towels, baby's bibs, etc. The pattern is worked in a series of small crosses made in squares regulated by the weave of the material.

Punch work, described in detail later, is done mainly in the background. It serves as a contrast to set off the design proper, which is then developed in heavy stem-stitch or satin-stitch.

Punch Work.—For punch work the design is stamped on linen, including dots, showing where holes are to be punched for the background. An open even-weave linen is preferred so that the threads may be pushed apart in the punching and drawn together in the working of the background stitch. It is difficult to stamp a design of this kind and have every background dot in its exact mathematical position and at the same time follow the unevenness which will occur in the weave of the linen, but this can be overcome in the working of the background stitches and by here and there punching a hole a thread or two away from the dot, the mark of which will later be covered by the background stitches. The punch work may be done on the sheerest of linens, lawns, or even on batiste, combined with embroidery, for filling in parts of leaves, centres of flowers, wings of butterflies, etc. It is here not a background, but part of the design itself, and one may make an ordinary embroidery design look very beautiful by its use in this manner. Of course, where the material is sheer, a finer needle is used for the punching. For linen of coarser weave, a heavy round or sail-maker's needle is best, the size being determined by the weight of the linen.

It is important to learn to do the background evenly and firmly. Start by putting the stamped linen in the hoop, getting it

straight, without wrinkles and secure. Select a large needle of the right size for the weave of the linen and a fine thread. Secure the latter to the reverse side of the design with an ordinary sewing needle and lead it through at the second dot of the first row of dots beginning at the top. The stitches you now make will take in two rows of dots. Insert needle at first hole of first row and bring it out at the second hole of first row. Draw up the thread. Now, insert needle at the first hole of the first row again and bring it out at the second dot of the second row of dots. Draw the thread firmly to secure the two stitches thus made between the first and second holes of the first row. Now insert the needle in the first dot of the second row of dots and bring it out at the second hole of the second row. Insert the needle again in the first hole of the second row and bring it out at the third dot of the first row. Insert needle in second hole of first row and bring it out at the third hole of first row. Then insert the needle in the second hole of the first row and bring it out at the third dot of the second row of dots. Please note that when the needle is first inserted we call the place a dot. For the second insertion of the needle, we call it a hole. Then insert the needle in the second hole of the second row and bring it out at the third hole of the second row. Carry from the second hole of the second row to the fourth dot of the first row. Draw up the thread firmly to secure the two stitches between the second and third holes of the second row. The second stitch should be drawn up more firmly than the first in order that the groups of threads may be held in place. Carry from the third hole of the first row to the fourth hole of the first row and from the third hole, first row, to the fourth dot, second row, drawing up thread firmly. Then carry from third hole, second row, to fourth hole, second row, and from third hole, second row, to fifth dot, first row, and draw up firmly. Carry from third hole, second row, to fourth hole, second row, and from third hole, second row, to fifth dot, first row, and draw up firmly. Carry from fourth hole, first row, to fifth hole, first row, and from fourth hole, first row, to fifth dot, second row, and draw up firmly. Then carry from fourth to fifth holes, second row, and from fourth hole, second row, to sixth dot, first row, and draw up firmly. Then from fifth to sixth holes, first row and from fifth hole, first row, to sixth dot, second row, and draw up. Then from fifth to sixth holes, second row, and from fifth hole, second row, to seventh dot, first row. Continue in this manner until you reach the bottom of the first and second rows. Then turn and come back as it were from the bottom to the top, working the perpendicular stitches over the third and fourth rows of dots. Then turn again and work the perpendicular stitches on the fifth and sixth rows of dots and so on throughout the background. After this, the horizontal stitches are to be worked. Turn one of the sides of the work to the top and work as before over the holes already formed. When completed, each group of threads in the fabric between the holes will be crossed by two strands of the working thread.

Things to Embroider.—In addition to articles of apparel, curtains and screens, which only a few women have time for, cushions and chair backs may be made in great variety. Sofa cushions are always desirable as gifts. A long, narrow cushion for the back of an invalid's chair, a neck-rest for a rocker, covers of linen to be slipped over a chair that has lost its freshness, little round table mats, pieces to brighten the centre of a dinner-table, portfolios and letter-cases, slippers and sewing and knitting-aprons, with pockets to hold a bit of work, thimble, and needle sheath, are among the many articles that may be made in leisure hours. The revival of interest in the old-time stitches, especially the cross stitch, has led to unusual activity in the making of towels—especially of small guest towels. These are always welcome as gifts, and some of them are very attractive in design. Anyone with a little practice can draw designs in straight lines for cross stitch. Initials may be so worked, and, for children, wooden-like figures of ducks, cats, dogs, etc. Even the good old Turkish towel is sometimes made into a thing of beauty by a finishing edge of coarse crocheted lace. As extra decoration the initials in cross stitch may be added.

Crocheting.

The little crochet hook is a very old instrument. Its charm is that with so small a tool so many beautiful things may be produced. From a counterpane to a collar, almost anything may be made with the crochet needle. Babies' afghans and sofa quilts for convalescents are often crocheted. There are few occupations more fascinating than this to those with time to spare.

Crocheted Tie.

The materials required for the work consist of one No. 8 steel crochet hook and tightly twisted crochet silk. The directions follow:

Chain 20, turn, make 19 single crochet.

Second Row—19 single crochet, chain 1, turn.

Third Row—1 single crochet stitch, puff stitch, repeat to end of row, chain 1, turn.

Repeat first and second and third row until tie measures 15 inches, ending with 19 single crochet. Skip second and next to last stitch every third row until you have 9 single crochet for neck band.

Make 14 or 15 inches for band, increase until you have 19 single crochet for short end of tie. Repeat first, second and third row, until short end measures 10 inches.

Knitting.

The delight of knitting is its sociability. Embroidery demands close attention, but the knitter may talk at the same time, her fingers moving with automatic precision. What pictures rise in our mind's eye of dear old ladies knitting by the fire, their needles flashing and their voices busy with social chat! Shawls for breakfast or evening wear can be either knitted or crocheted, and many other articles at once useful and ornamental, are at the command of busy and skilful fingers in this old-fashioned art.

Knitted Sweater.

The materials needed are nine hanks of yarn, No. 3: two celluloid knitting needles, 10 inch, No. 5; two steel knitting needles, No. 15. The directions follow:

NOTE.—The sweater is worked lengthwise; 2 rows form a rib. The directions are for 36 or 38 bust.

Front.—With celluloid needles cast on 160 stitches, knit plain until you have 10 ribs, then increase 1 stitch (at one end of needle only to shape neck) every other row until you have 170 stitches on needle, cast on 5 stitches for shoulder, on this length work 25 ribs, bind off 38 stitches for armhole, work 3 ribs, now cast on 35 stitches for back, work 42 ribs. This completes one half of sweater, work second half to correspond.

Border.—With steel needles pick up stitches on right front, work 4 ribs, on next row work buttonholes as follows: Knit 4 stitches, * bind off 6 stitches, knit 24 stitches, repeat from * to end of row, on next row cast on stitches that were bound off on preceding row, knit 5 more ribs, bind off, work border on left front omitting buttonholes.

Sleeves.—Cast on 96 stitches, work 10 ribs, then increase 1 stitch every third rib, (on one end only) until you have 105 stitches on needle, then decrease in the same manner that you increased until 96 stitches remain, work 10 ribs more, this completes sleeve.

Cuff.—With steel needles pick up 75 stitches around straight edge of sleeve * knit 3, purl 3, repeat from * to end of row.

Row 2.—* Purl 3, knit 3, repeat from * to end of row. Repeat these 2 rows until cuff measures 5 inches, bind off, sew up sleeve.

Collar.—With steel needles cast on 32 stitches.

Row 1.—Knit plain.

Row 2.—Purl, repeat these 2 rows for all the work, increasing 1 stitch every row at one end of work only until you have 48 stitches, work on this length until work measures 7 inches which is one-half of collar, work second half to correspond, fit the neck of sweater to shaped side of collar and sew on.

Pockets.—With celluloid needles cast on 30 stitches, knit 22 ribs, bind off, with steel needles pick up 35 stitches at one end, work 8 ribs, bind off.

Belt.—With steel needles cast on 18 stitches, knit plain until belt measures

8 inches, turn in corners to form a point at each end, sew on to sweater, finish with 2 buttons.

Stenciling.

Stenciling is very easy to do, and simple patterns on crash make effective table covers, pillows, curtains, etc. Even little children can be taught to do stencil work satisfactorily.

The materials needed are a heavy stencil brush and one or two tubes of oil paint. Mix the paint in an old saucer, thinning it with turpentine. Do not, however, use too much turpentine, or the paint will run and smear.

With thumb-tacks fasten the material to be stenciled tightly to a board. Then fasten the stencil and apply the paint. Rub the brush with a circular motion until each opening is well filled with color. If using two colors, do not apply the second until the first has dried. When done, lift the stencil carefully in order that the material may not become smeared.

China Painting.

For this work procure your colors in tubes, since you will thus acquire a greater variety than you would for either oil or water-color painting. The colors most in use are black, white, gray, and several shades of red, brown, green, yellow, and purple. These may be obtained at any art-store. The tube colors are diluted with turpentine. You will require a porcelain palette, a glass slab, several camel's hair brushes of different sizes, a bottle of spirits of turpentine, one of 98 per cent. alcohol, and small bottles of oil of turpentine, oil of lavender, and balsam of copaiba. A steel palette knife, and one of horn or ivory; a rest for the hand while painting, made of a strip of wood about an inch long and twelve inches wide; a small glass muller; and a fine needle set in a handle for removing tiny particles of dust.

A p ate, a flat plaque, or a tile is best to begin with, and the first design should be of the simplest. One must learn by degrees how to use the colors which will best stand the firing, which is the crucial test. There are places in the cities to which articles of painted china may be sent to be fired, few people having the facilities to do this in their homes.

Painting can be applied to china, to velvet, to satin, to cloth, and to almost every fabric and material in use among civilized peoples

By study, careful watching of processes, attention to details, and obedience to the directions of the best manuals, one may learn to paint creditably without a master. But all arts are rendered less difficult by a painstaking teacher, and many weary hours and disappointments may be saved by joining an art class.

Amateur Photography.

To have one's picture taken was formerly a family event; now it is the work of a fraction of a minute in the photographer's chair, while the art of photography is a common amusement for leisure hours.

An amateur photographer's outfit is not very expensive, and is an exceedingly attractive and instructive possession to young and old alike. The negatives taken will be developed by any professional photographer, or may be by the amateur himself, if ingenious enough to prepare the necessary appointments and study the art. For this he must resort to works on photography

Care of Domestic Animals and Plants.

It seems advisable to supplement what we have said about the methods of making home attractive with some consideration of other important elements of home interest, the plants and flowers which change our windows into miniature conservatories, and the singing birds and other pet animals to which we give loving care, and whose lively arts and sweet voices help to make the hours pass pleasantly. First among these it will be well to speak of the prime favorite among all the feathered tribe, the golden-plumaged and sweet-voiced canary.

The Canary Bird.

No birds, except pigeons and fowls, have developed under man's care into so many varieties as the canary. The original wild bird is a finch, of greenish hue. Among

A MODEL KITCHEN

The two views show a model kitchen arranged for convenience—for health and economy. The floor covered with oil cloth or tiles, the walls papered or painted, plumbing easily accessible, pantries and cupboards ample—range of the latest pattern, and sinks with hot and cold water.

BEDROOM FURNISHINGS

The bed-room at the left is a suggestion for a room furnished in blue and white. The walls may be hung with satin striped paper. The draperies may be easily made and artistically arranged. The room at the right looks out upon a balcony. The bedstead may be of brass, the furniture of bird's-eye maple, bedspread and bureau cover may be trimmed with lace. The floors may be covered with rugs, and walls tinted.

domestic birds there are several varieties fully or partly green, but yellow is the most admired tint, there being several shades of this favorite color. The canary, above all other birds, lives and thrives in a cage. It has been bred for so long a series of generations to cage-life that its native wildness has vanished, and in the open air it is quite incapable of taking care of itself. In the cage it is bred with greater ease and success than almost any other bird, and the raising of canaries is in some localities, as in the Hartz Mountains of Germany, a distinct and profitable business.

It is as a song-bird that the canary is most valued, and for many generations its powers of song have been developed in Germany until they approach perfection. The young birds are carefully trained, some by skillful older singers, some by the flageolet, until they can execute certain fine trills or passages of melody. Some songsters have the wonderful compass of four octaves, and can sing various "shakes" in marvelous style. Each burst of song should, for the best effect, end in a soft, flute-like, falling passage, an effect which it takes six months' training to produce. Many birds of excitable temperament are apt to break into loud, detached notes, which spoils their song to the ear of an adept in canary music.

The song of the canary is evidently a matter of choice and training, and the German song canary has a voice vastly more beautiful than that of the wild bird. Cock birds of fine voice are chosen to breed from and also as tutors, young birds, if possible, being trained in a room where they can hear only the tutor, for they will pick up bad notes as easily as good ones if left where they can hear them. The tutors and pupils are allowed to sing only about three hours each day, being covered up the rest of the time. Birds that have caught up bad notes need to be drafted off, before they can make mischief among the others. If there is no good tutor, a flageolet will serve, with the condition that the same air must always be played in exactly the same way.

The colors of cage birds vary considerably, through green, yellow, white, brown, gray, etc. The yellow and the white have often red eyes, and are the most tender; those most resembling the wild race—dusky green above and yellowish green beneath—are the strongest. The bird now most admired is of yellow or white body, with head, wings, and tail of a lively yellow. The golden yellow bird, with head, wings, and tail black, or dusky gray, comes next in estimation. There are other admired shades of color, those spotted or speckled being of least value.

Care of Canaries.

In keeping canaries much attention must be paid to the cage, which is very liable to be infested with the canary mite, a plague so constant that great care is needed to avoid it. It begins with a floury dust, which is soon found to be alive, the insects becoming larger and reddish in color. They harbor in the minutest crack. To destroy them, every cage should be completely plastered with whitewash and carbolic acid at the beginning and end of each breeding season, each chink being carefully filled. If any of the "flour" appears on the perch, this should be withdrawn, the place painted with oil, and a new perch with an oiled roof put in. If it is in a crack, paint it over with spirit varnish. If the case is a bad one, paint with solution of bichloride of mercury, rubbing it well into the places, and, when dried, varnish over it. In this way the enemy may be overcome.

The food of the bird is an important matter. In Germany summer rape seed, of mild quality, is chiefly used, the cocks—the only singers—having also a little bread-crumb and egg. To force them, dealers often feed them almost entirely on egg-food, and the bird, when purchased, is fed solely on canary seed, or canary and hemp seed. This sudden change is apt to prove injurious.

Canaries are liable to various disorders which need special treatment. Colds may be cured by putting twenty drops of paregoric, a bit of gum arabic the size of a pea, and half a teaspoonful of glycerine in the water. Loss of voice may be treated in the same way, but in either case it is best to give first a drop or two of castor oil from the point of a penholder.

A dirty cage or stale green food may yield its result in diarrhœa. This is best treated by oil given as above, afterwards adding gum to the fountain and sprinkling a little prepared chalk in the egg-food. If green food is properly given constipation is rare. When it occurs, a teaspoonful of glycerine, followed by one of infusion of gentian, should be added to the water.

The feet need to be examined now and then, since balls may gather upon them and cause much pain. The claws also may need to be shortened a little from time to time, being clipped with scissors.

The Mocking Bird.

Among American birds, the mocking bird stands high in public estimation. The vocal powers of this plain-plumaged favorite are extraordinary, no other species approaching it as a mimic, except its near relative, the cat bird. Its powers of imitation are wonderfully varied and perfect, and it is inclined to show them as well in captivity as in freedom. Its own song is full, bold, and exceedingly varied, and it has the faculty in its native bush of repeating the songs of all its feathered neighbors as exactly as an echo. In captivity it can be taught a long air by its master, and will imitate the quavering trill of the canary and the fluting whistle of the redbird with such fine execution as to silence these expert singers. It can imitate many less musical sounds, will whistle for the dog, squeal like a hurt chicken, bark, mew, creak like the wheelbarrow, and vary its notes endlessly. A well-trained mocker is a wonder, though at times it may become an annoyance from its endless vivacity.

The natural food of the mocking bird consists of insects, fruit and berries, and a few insects or meal worms should be added to its daily diet, which may consist of what is called fig-dust—finely-grained oats mixed into a stiff dough with milk and water. Carrot and boiled potato may be given alternately, with a little egg-food. Gravel and water, of course, are needed by all birds.

Other Song Birds.

The Virginia redbird is at once beautiful in plumage and a favorite for its loud and almost constant song. It is hardy, and if properly fed is liable to few ailments. It needs to be fed with seeds, soft food, and insects. A little cuttle-fish bone should hang in the cage, and a red pepper-pod.

Others of our native birds kept as cage birds are the beautiful oriole, the merry bobolink, with its canary-like song, the handsome goldfinch, with its sweet warble, the brown thrush, and others of more or less powers of song.

Of foreign birds may be named the European starling, a handsome fellow, of beautiful black plumage speckled with a yellowish white, and with a song of great sweetness. It sings summer and winter, and can be taught to sing and whistle tunes. It needs soft food, doing well on bread and milk, with a little animal food and sweet and ripe fruit. It is fond of bathing, plenty of water being essential to its health. It must have a deep saucer of gravel or a large turf to dig its beak in, which otherwise will grow deformed.

There are several other European birds of good voice, chief among them, of course, the nightingale, which, however, does not thrive in a cage. The green linnet is a pretty fellow, and, mated with the canary, produces the finest of singing birds. Other handsome foreign birds are the Java sparrow, a quarrelsome little fellow; the Japanese robin, a good songster and ready imitator, and the beautiful South American troopial, a lovely pet with excellent powers of song.

Parrots.

Among cage birds not noted for sweetness of song, yet of high popularity, may be named the gray parrot, a familiar inmate of hundreds of households, and widely welcome for the part it takes in the conversation of the family. It is, in its way, as imitative as the mocking bird, but its vocal powers are adapted to the imitation of words instead of song notes, and its achievements in this direction are often extraordinary, especially as the uncanny bird frequently makes his words fit the occasion so closely that he seems to know well what they mean.

The domesticated parrot has no objection to the cage, often manifesting uneasiness when let out for a promenade. The

food of the gray parrot should consist of maize, oats, wheat, and bird-seeds, with occasional nuts and biscuits, and ripe fruit in its season, this being very useful and wholesome. They can be easily taught to eat potato, and bread and milk and other soft food may be freely given. They will eat meat readily, but, as it tends to produce disease, it should not be given. They should have frequent opportunities to bathe, and, if they fail to do so, should be showered in summer, now and then, with warm water from a syringe.

The Amazon parrot, a more highly-colored bird, is as good a talker as the gray. Its plumage is green over most of the body. Its food and general treatment should be as above described. Of other large parrots we may name the king parrot, a splendid red and green bird, Pennant's parrakeet, and the rosellas. These must all have the same diet of seeds and vegetable food, with fruit in the season. The beautiful king parrot, one of the quietest of these birds, breeds freely in captivity.

Parrots usually leave off screaming when they grow tame and familiar, but there are some hopeless cases, and several cockatoos together may prove worse than a brass band. The beaks of the larger parrots are also so strong that only very stout cages can stand their attacks, and bad-tempered birds need to be dealt with cautiously, as they could break or sever a finger with great ease.

As a general rule, the food of all parrots should consist of grain and seeds, especially millet, maize, or harvest grains in the ear or on the stalk. Sunflower seed is highly relished, and such green food as salad herbs, chickweed, groundsel, etc., should be given freely, with a twig from some green tree to gnaw at. Biscuits are good in moderation, as also nuts and sweet fruits.

There is a large family of small parrakeets, the so-called love-birds, of remarkable beauty of plumage, at the head of which, for beauty, hardiness, and docility, is the shell parrot of Australia. This bird breeds in captivity as readily as the canary, and, as it is very gregarious, it does best in an aviary, where numerous pairs can be let loose. For breeding it must be provided with a log, with a suitable hole made in it, its native nest being built in hollow logs. There are other varieties of parrakeets kept in captivity, but some of them are delicate and hard to keep. They can be fed on millet, maize, canary seed, and the like.

Pigeons.

There are few pets which give so little trouble to keep and rear as pigeons, owing to the fact that they bring up and feed their young until these are old enough to provide for themselves. Cage-birds, it is true, do the same, but there are many dangers and mishaps to birds grown in confinement, which the pigeon, with its outdoor exercise, escapes—except in some of the highly artificial "fancy" varieties.

In keeping pigeons, the first rule to observe is never to *crowd* the birds. If there is only a small space, one good pair of pigeons will rear more young in it than several pairs. A room with six feet square of space will accommodate about six pairs of breeding-birds,—not more. There should be fewer, unless the young are sold or eaten as they grow large. The pigeon-cote in a wall or at the top of a pole is fit for only the most common and hardy pigeons, and these if used remain wild and cannot be tamed or handled.

Pigeons must either be allowed to fly out at liberty or have a wire-enclosed space outside in which they can take exercise. A space twelve feet long and six feet wide and high will do very well. It should have shelves at the ends, affording a flight from one shelf to the other. The floor should be covered with lime and sand or some form of concrete, so that it may be easily cleaned. It needs nothing else except a vessel of water for the pigeons to bathe in. This may be three or four inches deep and two or three feet square, the water being renewed every morning.

Within the loft nesting places must be provided. A simple kind is a series of shelves across the back of the loft, with an upright partition in the middle, dividing it into two sets of shelves. Boards must be nailed down the front, leaving a central opening for the birds to each shelf space. Each length of shelf forms a breeding place for one pair of pigeons.

Perches for the birds must be fixed along the sides of the loft, as roosting places, with slanting boards beneath to catch the droppings of the birds. These can be very easily cleaned. The loft should be painted, and scrubbed at intervals with carbolic soap, or whitewashed at suitable periods with hot lime. To avoid fleas or other vermin, cover the floor with an inch of coarse pine sawdust. If the droppings be raked off every few days, this need not be renewed for several weeks.

For pigeons in confinement, the permanent staple diet should be good gray peas. In winter these may be changed to small sound tick beans. Either should be mixed with one-third of large tares, and a little good barley may be added. Beans are too hard in summer, and the diet should consist of mixed peas and wheat, with small corn. For very small pigeons small peas must be selected, with a few tares. Pigeons are very fond of hempseed, but nothing can be worse for regular food. A handful now and then is stimulating. Small seeds, like canary and millet, are much relished, and are useful for the young birds. The food should be given in some kind of a hopper, so that the birds cannot foul it with their droppings. Pigeons at liberty eat all kinds of things besides grain, such as grubs and small worms. Some will eat minced meat in confinement, and others relish boiled potato, bread and milk, etc.

There is one element of pigeon diet which must never be omitted. They have a craving for lime and salt, and will pick at old mortar. Take equal parts of old mortar pounded, sandy gravel, and loamy earth, and add to a gallon of this a half pint of cummin seed and as much coarse bay salt. Mix this with strong lime into a mortar, and keep it constantly supplied to a box, with a slit near the top into which the birds can get their heads. If their bodies could get in they would soon tread it hard. If old mortar cannot be had, old slaked lime will do, hard enough to need pounding.

Highly-bred pigeons are subject to various complaints, from which the hardier kinds are largely free. For the former a special handbook of diseases and treatment will be necessary. For the latter a simple treatment suffices. Colds will often yield to a pinch of Epsom salts and shutting the bird up in a warm pen, bathing the legs in hot water and drying every night; diarrhœa, to a few drops of chlorodyne. Wing disease is somewhat frequent in confined birds, hard yellowish lumps showing on the joints of the wings. These should be painted daily with spirits of turpentine or tincture of iodine, or rubbed with iodine ointment.

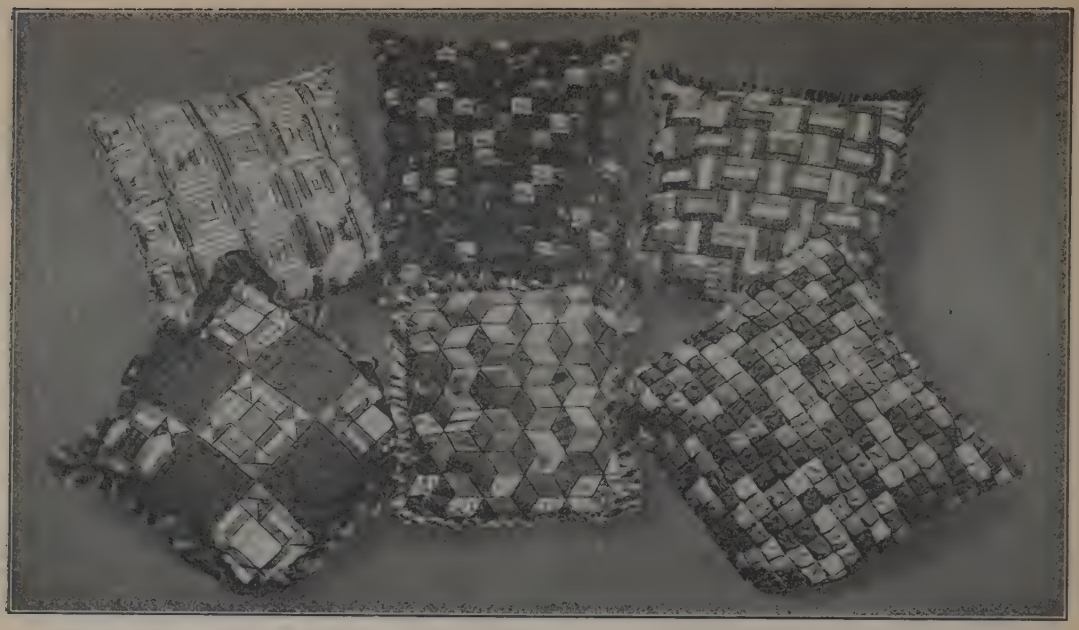
Rabbits.

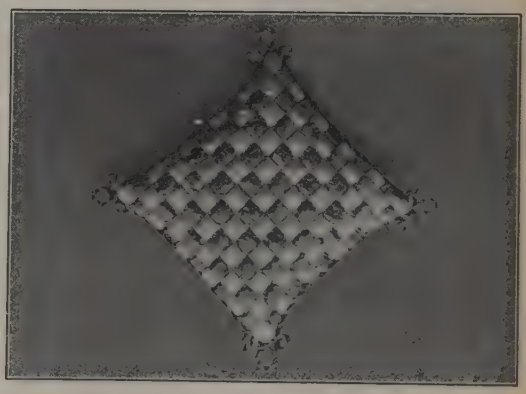
The rabbit is a boy's favorite, needing, of course, much more space than a bird. It can be best kept in a dry shed, ventilated at top only, and well lighted. The floors are usually of earth, but are better if made of concrete or paving stones, for convenience in keeping clean. Even a rough shed open at the front is much better than none at all, or a large door or shutter fixed over a couple of hutches. The rabbit will not thrive without light, and it is very susceptible to bad weather, being subject to "snuffles" (a kind of influenza) and other disorders.

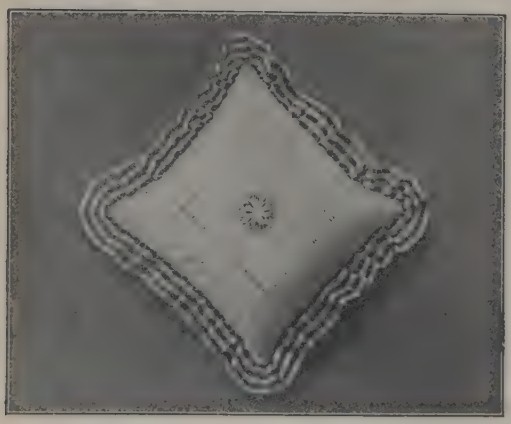
A breeding hutch should not be less than three feet long and eighteen inches wide, with a partition a foot from one end, to make a sleeping chamber. Near this must be a round hole, for the doe to pass in and out, with a sliding shutter to close it. Rabbits are very prolific, having usually eight or ten young four times a year. These should not be taken from their parents till they are six weeks old.

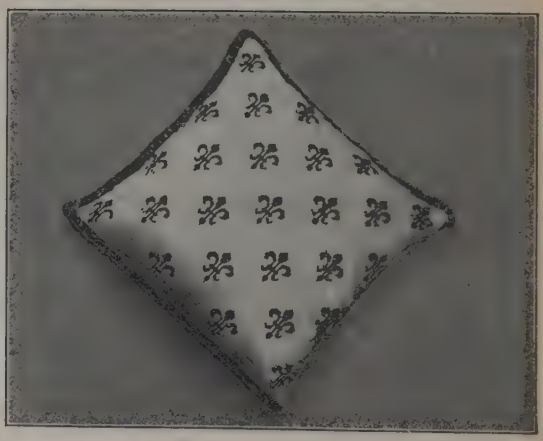
The rabbit is easily kept, feeding on grass, hay, vegetable food, fruit, scraps of bread, and almost any fresh vegetable matter. The cuttings and clippings of the kitchen are welcome to the hutch. It is easy, however, to give too much food, and wrong to give it wet. Some kind of grain or seed is the basis of sound rabbit food, oats being the best. It is wise to give only a little food at a time, and keep the rabbits rather hungry. Overfeeding is bad.

In addition to the common rabbit, there are many fancy breeds, among them the Lop-eared, the Horn, the Angora, and the Maltese. Some of these are very odd-looking, but none of them are as handsome as the pure white, pink-eyed breed.









SOFA PILLOWS

Beautiful designs easily made. A group, each made of pieces of silk, ribbbon and velvet, cut in squares, diamonds and other shapes. Of the others, one is made of crimson denim with fleur-de-lis embroidered in dark blue silk; a second is of butchers' linen with square designs of drawn work in the centre; a third is in alternating squares of college colors; and the fourth is an octagonal pillow of white linen, the autographs are written in with pencil and outlined in silk.

The Belgian Hare.

This interesting animal is proving to be a popular one for small investments. They are very prolific breeders, rearing several broods each season. They are larger than the common rabbit and are better eating. A dressed Belgian hare brings good prices in the market. Their meat is light in color and of excellent flavor. They are easily cared for and cheaply fed. A pair of Belgian hares will soon multiply into a large number and bring quick returns in money or meat for the original investment.

Other Animal Pets.

Of other animals kept as pets may be named the Guinea pig and the squirrel, the former kept much like the rabbit, the latter in a cage. The squirrel in captivity is an active fellow, fond of exercise, and if provided with a revolving wheel, for an occasional run, will keep healthy and happy. It should be provided with nuts for food, with corn or wheat, or pieces of dry bread; also a little bread and milk, squeezed rather dry. Some bits of meat are relished, but should be given sparingly.

Rats and mice are also kept in cage-life, the rat being almost as much given to comical antics as the monkey. The outer cage should have several perches and a wire ladder or two. The revolving cage sometimes used is a cruel device for these animals; a roomy cage, with perches, ladders, and swings, is far better and more interesting, from their varied gymnastic powers.

White mice, with their pretty pink eyes, are pets admired by many. They are tame and hardy, and can be trained to perform many amusing tricks. Corn meal is their favorite food. The white rat, a Chinese species, is very similar to the white mouse, and if kept clean is an interesting pet. Of course, these little creatures are not likely to be welcome to those who bear an inborn prejudice against them, but they are innocent and harmless animals, and those who keep them grow very fond of them.

The Aquarium.

The indoor aquarium is a very attractive feature in many homes, and is capable of being varied almost endlessly. It will furnish many hours of study and occupation. Its simplest form is the familiar globe for gold and silver fish, which can be set on a stand and forms a very attractive ornament. It should be kept about three-fourths full of water, which needs to be changed at least once a week. It is well to put a little washed gravel at the bottom, and some clean duckweed or other water-plant should be put in the water. These aid to keep up the supply of oxygen, and the fish will nibble them occasionally. Small particles of bread or biscuit serve for food.

A larger aquarium is of much more interest. This is usually an oblong tank, with glass sides and ends, made watertight. A glass plate can be laid over the top, with a narrow open space, so as to admit air and keep out dust. The tank should be bedded with clean, sandy gravel, which needs to be well washed, on which is placed some kind of rock-work, with a few chinks or crannies for retirement. These materials should be well boiled to destroy any undesirable growths. The plants needed may be selected somewhat widely from aquatic growths. Some will root in the gravel; others, like duckweed, will float at large.

A few fresh-water snails are all the mollusks needed. For fish, almost any of the smaller kinds will do. The perch can be tamed to take food from the hand. The sticklebacks are interesting from their nest-building habits, but they are such fighters that it is necessary to keep them by themselves. The smaller fishes may be fed with insects, tiny bits of meat, and bread crumbs; the larger occasionally with minnows. Worms are useful, and sometimes the only food available. Of other aquarium animals, the newts are pretty and interesting, swimming about with their olive bodies, or sometimes basking on the rock.

Keep only a few kinds of fish and other animals together. If scum collects, clean it off, or add another snail, which will do the work of an extra scavenger. If the inmates look sluggish and poor, replace some of the water and aerate it well. See to it that a good supply of insects and small worms is put in as food; water-fleas, small larvæ, etc., may be given freely. Take out at once

any *large* dead or decaying thing. If all goes well, you need add only some rain-water now and then, to supply the loss by evaporation.

House Plants and Flowers.

Interesting as many of the cage-birds and other house pets are, the window conservatory and the flowering plant are of more value for home adornment, on account of the much less care needed, and their striking beauty when in bloom. The plants which can be used for house adornment are very numerous. We do not need to go to foreign lands in search of them, for they grow and bloom all around us. Many of the wild flowers of our fields and forests respond well to the loving hand of their admirer, and the ferns which are abundant in dell and ravine will fill up with attractive green many spare nooks in garden or on window-shelf.

The flowers raised in pots for house use are greatly varied in kind and character, including the favorite rose and lily, the constant-blooming geraniums, the azaleas, hyacinths, tulips, dahlias, and a great variety of others, too numerous to mention. Among them are many climbers which are very attractive when given an opportunity to drape an open space. Not only in the house, but in any bit of ground in its vicinity, green things can readily be kept in growth, bursting into rare beauty at some time in the year, when their period of bloom arrives.

Geraniums.

The geranium forms one of the most attractive of flowering plants from its rich hue and the fact that it keeps in bloom through a great part of the season. The cultivation of it is easy, almost any kind of soil answering the purpose. To set out a pot of geraniums, a small quantity of sand should be mixed with the soil, and some good manure added. The plant being well set in the earth, it should be watered, left for several days in a cool and shady spot, then put for a few hours in the light. In a short time it will become accustomed to the sunshine.

When the warm season comes, the pots can be set out in the ground, being buried to their tops. A cloudy day or late afternoon should be chosen, so as to avoid too much sunshine at first. To keep the geranium in attractive condition, decaying leaves and fading flower-heads should be removed, so that the plants may look always fresh. Slips will root well if set in the earth where shaded from the direct rays of the sun. They should be set well down and the earth pressed compactly around them. In this way fine young plants can be got ready for the winter flower garden.

Sweet Pea.

This is one of the most beautiful of the summer-garden flowers, from its great variety of color and abundant bloom. It has also the charm of a sweet perfume. It supplies many shades of colored bloom—white, rose, scarlet, purple, and variegated. Each variety should be planted separately, and several feet from any other plant. When support is required by the growing plant, a light rod will serve the purpose. The seed should be sown in rich ground in the early spring, the plant growing five or six feet high, and blooming from July to October.

In city gardens, indeed, it often proves difficult to cultivate, it being subject to the attack of minute insects which are almost impossible to eradicate. While in some gardens it grows freely and blooms profusely, in others it sadly fails, all efforts to destroy its enemies proving without avail.

Azalea.

The azaleas are easily cultivated, being very hardy, and form very attractive plants. They come in many colors and also striped, spotted, or otherwise variegated. They need a light soil of sandy loam, to which leaf-mold should be added. The foliage requires showering once a week, but the roots will rot if overwatered. Flower stems form in the new wood of each summer's growth, so that the amount of bloom is apt to depend upon the annual quantity of new wood. The plants are set out in May, and need to be taken up in early autumn. They do best in the house in a temperature varying from 40° at night to 70° in the daytime.

Hyacinths and Tulips.

The hyacinth is an easily-cultivated plant, of which more than a thousand varieties are grown in Holland, forming an important item of that country's export trade. All Europe and the United States are supplied with bulbs from this source. These should be set out in October or November, the finer sorts in beds, the common kinds as border plants. They will bloom in April, and may be kept in bloom for nearly a month. No watering is needed, but they must be kept free from weeds and supported with small sticks as they increase in height. They form a rich garden ornament, varying through every shade of red down to white, from blue to almost black, while some few are of yellow color.

The brilliant tulip is also a plant largely grown and yielding many varieties in Holland, in which land it has been famous for centuries. The bulbs should be planted in October or November, being set about four inches deep and four to six inches apart. They need a protective covering in case of severe frosts. They bloom in early spring, making a brilliant display with their gay and rich hues. There are both early and late bloomers, so that a tulip border may be kept in fine appearance for a considerable period. They succeed well in ordinary garden soil, and, with the hyacinth, make a very showy spring floral display. After the period of bloom, they can be taken up and stored until autumn, other plants taking their places.

Pansies.

The heart's-ease, or pansy, is a favorite with every one, from its beauty of color and the great variation alike in the form and tint of its flowers. These make their appearance early in the spring, and will continue to bloom till the time of frost comes again. They reach their finest bloom in May and June, wilt somewhat under the summer sun, but regain their beauty in autumn.

In planting pansies, a spot with a north aspect should be chosen. Soil of medium texture and not overfertilized is best. The soil should be kept loose around them, and care be taken to see that the border is free from the wireworm. By setting out the plants in September they become well bedded before winter, and seem to do as well as those kept in frames. Their propagation is easy, and young plants can be depended upon for the following season's beds. Seeds, if saved, should be taken only from choice flowers; in this way alone can improved varieties be obtained.

Verbenas and Petunias.

The verbena is a South American plant, which will bloom with us, in the open air, from May to November, its brilliant scarlet flowers having no superior for rich show. Endless varieties have been produced by cultivation, their tints running through every shade except blue and yellow. There are every shade of red, scarlet, crimson, purple, rose, etc.; also scarlet and purple, white with red eye, and various other pretty combinations.

The plant is a creeper, taking root freely wherever the stems come into contact with the ground. It is difficult to keep it through the winter, except in the house or conservatory, none of the roots being quite hardy enough to stand the wintry chill. Yet it continues to bloom after frost, and is one of the last lingering flowers of the fall. It can be easily reproduced from plants to be had at any greenhouse, and also from seed, which, if sown in May, will yield bloom in August. No plant surpasses the verbena for mass effect, when grown in beds cut out on lawns, where the brilliant flowers contrast finely with the green grass.

The petunia is another plant which blooms throughout the entire season, even after severe frosts. A bed of petunias will be profuse in flowers, varying widely in color and markings; some single, others double, occasionally as large and full as a rose. There are three classes, the grandiflora, the small-flowered, and the double, the small-flowered being the most common. It is the latter that add so much to the beauty of our gardens by their great variety of hue.

The Lily and Rose.

Of the lily there are numerous widely-varied species, many of them well known, many others rarely seen in gardens. It

grows from a bulb, and will do well in any well-protected bed. To develop it in perfection the soil should be dug to a depth of a foot and a half, filled to a foot with swamp muck and leaf mold or fresh manure, and the hole filled with six inches of peat and rich mold. The bulbs should be planted four or five inches deep, or, of the weaker sorts, three or four inches. Most of the species are quite hardy, but it is advantageous to cover them with a deep compost before winter.

The cultivation of the rose needs no special directions. The plants, once rooted, last for years, and bloom freely with little cultivation; some once only in the season, others continually. They are nearly all hardy, though many require some degree of winter protection.

North America has furnished our gardens with various handsome flowers, among them the large and beautiful dahlia, whose very numerous varieties, more than two thousand in all, have been derived by cultivation from two species of Mexican plants. The neat grace and perfection of their floral forms and great variety of shades of scarlet, crimson, purple, red and yellow, give them a special adaptation to floral borders, where they lift their trim heads with an air of pride. No plants surpass these in their inclination to sport into new varieties. The dahlias are generally cultivated by the division of the tuberous roots. These will not bear the frosts of northern climates, and must be taken up as soon as frost blackens the tops and kept for winter in a dry and sufficiently warm place.

Another handsome garden plant of North American origin is the familiar and favorite phlox, which bears its flowers in terminal panicles. The original form, once much grown in our gardens, is now rarely met with, the showy phloxes of to-day being all hybridized varieties, the production of the florists. They are highly ornamental in character. One species, the *drummondii*, has sported into a variety of beautiful colors, and is one of the most showy of cultivated annuals.

Among the wild flowers of the United States the most magnificent when in bloom is the rhododendron, which forms impenetrable thickets in many parts of the Alleghanies, and, with its related plant, the mountain laurel, gives a wonderful charm in the floral season to the Appalachian mountain glens, from Maine to Georgia. The cultivated rhododendron is produced by hybridization between the American and several Asiatic species,. In the hands of the florist it has attained a wonderful exuberance of form and color, the highly-cultivated varieties being unequaled for richness of hue and showiness and profusion of petals. It is a hardy plant, and will winter out of doors, calling for no special care or cultivation. This, of course, does not apply to the floral monstrosities annually exhibited, as results of the exaggerated care of flower fanciers.

We have named here only a few of the better known of an innumerable variety of flowers, very many of which are adapted for house cultivation or garden growth; but, as their treatment does not vary greatly, and in special cases must be learned largely by experience, we shall say no more here upon this attractive subject.

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THE PRACTICAL MECHANIC

HOW TO MAKE YOUR OWN REPAIRS—HELPS IN CARPENTERING, BRICKLAYING, METAL WORKING, PAPER HANGING, AND OTHER USEFUL OCCUPATIONS—INSTALLATION OF ELECTRIC BELLS, TELEPHONES AND OTHER MECHANICAL APPLIANCES—PRACTICAL RECIPES AND DIRECTIONS.

EVERY MAN HIS OWN MECHANIC

Mend your broken chairs and crippled furniture; put fresh panes of glass into your broken windows; do your own repairs as far as it is practicable, indoors and out of doors; look after your own locks and fastenings; make your own garden tools and appliances; put up your own sheds, greenhouses, and garden buildings, and I shall answer for it that if you check what you save on each job, you will find yourself in pocket at the end of the year merely through resorting to self-help.

Let us take a simple case of common occurrence, as for example, a broken window, and see, by comparing the cost of repairs when executed by a glazier on the one hand, and done by the householder himself on the other, how much may be saved by means of a little practical knowledge and self-help.

Broken Window, How to Mend it.

We shall first look into the cost of the work when the householder is his own mechanic. The man who lays himself out to do odd jobs of this kind will of course have at hand the tools necessary for carrying out the work, namely, a hammer, a suitable knife for hacking out or cutting away the hardened putty and fragments of glass still remaining in the window frame, and a putty knife. The first thing to be done is to clear the rebate or groove in the sash-frame for the reception of the new pane The next step is to measure accurately the length and breadth of the aperture, including the rebate, and procure a piece of glass of the required size from any painter and glazier or store which cuts glass for those who may require it. A little putty must also be procured. Now, supposing, that the glass measures 18 in. by 12 in., or, in other words, contains one and a half superficial feet, the cost of the glass will be 10 cents. The cost of the putty may be reckoned at 1 cent, putty generally speaking being 5 cents per pound, though it may be frequently purchased at the paint store for 4 cents per pound. The expense, then, of putting things as they were before to the householder who can use his hands is no more than 11 or 12 cents. It will cost 25 cents or more if a journeyman is called in.

It may be argued that a man who aspires to be his own mechanic cannot possibly gain a sufficient knowledge of all or any of the various building trades to enable him to do the necessary work of construction or repairs in a workmanlike manner, and that even if he could do so he would never be able to find time enough to do all that may be wanted in house and garden from year's

end to year's end. Yet, so far as time is concerned, it may be pointed out at once that the most hard-worked man has his regular or occasional half-holiday, to say nothing of the summer evenings when there is light enough for handi-craft work even after 8 o'clock; and if these be not enough, he must—as people are often told to do who object that they can find no time for this, that, and the other—MAKE time.

Knowledge Must Be Paid For.

It is good policy, then, for every man who seeks to do a little as a handicraftsman, to lay out a few dollars in obtaining the services of any moderately skilled artisan, who, for such a sum, would willingly show the aspirant how to use his tools, and how to keep them in working order. Thus, for example, if a man desired to follow up carpentry, it will be beneficial to him in the highest degree to enlist the services of a carpenter who will show him how to use his saw and his plane, and how to keep his saw fit for use by sharpening it with a file, and his plane and other cutting tools in proper condition by means of the grindstone and oilstone. If, again, he wished to be able to build a brick wall, he should get a bricklayer to show him how to prepare his foundations with spade and level, and how to put in the footings of his wall, and to raise it, course after course, so that its faces within and without, may be truly perpendicular, inclining neither to the one side nor the other. Having once learned *how* to do a thing, a fairly intelligent man will not require so very much practice to enable him to do such work as inclination or necessity may suggest, in a tolerably workmanlike manner.

Carpentry Most Desirable.

If it be asked what branch of handicraft trade, or, to bring matters within a narrower compass, what branch of the building trade is most suitable and most useful for amateurs generally, and householders especially, it must be answered that a knowledge of carpentry and joinery will be found by far the most desirable. Next to this, it is necessary to know something about painting and glazing, which comes fairly within the province of the amateur. Collaterally with these useful arts, paperhanging may be mentioned. It is unlikely that a man will do much smith's work, but even in this it is possible for an amateur to do something, and a slight acquaintance with the arts of brazing, soldering, and working in metals will enable a man to make propagating cases that shall do him good service, and apparatus for heating a small greenhouse, if he have one, at little expense, even if he still leaves it to the peripatetic knife-grinder and tinman to stop up holes in leaking coffee-pots and saucepans, and to renew the damaged bottoms of colanders and milk-strainers.

Bricklaying and Masonry.

Bricklaying and masonry are trades which possibly an amateur will not meddle much with; but some slight acquaintance with the principles of each, and the materials employed, is desirable, even if it be for no other or better purpose than that of giving an eye to any workman who may be employed in this way on the premises, in order to see that he is doing his work in a workmanlike manner, that he is using proper materials, and that he is not wasting his time—a thing which no workman who has any self-respect will do. It is, however, quite as well to be able to know oneself how to set a stone or step that has become loose by one cause or another, in cement, and how to prepare the cement for the work; and know in what proportions sand and cement should be mingled for the purpose of making a suitable composition for fixing the step once again, so that it may remain immovable in its proper position.

Excavating.

Lastly, a knowledge of excavating in all its branches is attended with advantage. In the term "excavating" a far greater variety of work is comprised than appears upon the face of it at first sight. It means far more than digging or hollowing out a pit, as for a well or a trench, or for the foundation of a wall. It embraces these, it is true, but it also implies a knowledge of the manufacture—if we may use the word—

of concrete, and the purposes to which it is put, of making garden walks and paths, and of leveling, so far as it may be applied to the construction of drains for carrying off the surplus water from the soil of the garden, or even from a stable or pigsty, and the laying of drain-pipes for this purpose. It also gathers within its wide embrace a knowledge of the method of making tar paving and burning clay into ballast—processes which will often be found extremely useful in the garden.

Kinds and Prices of Materials.

It is important for every one who attempts to work in wood that he should be familiar with the various kinds of wood that are used, and the purposes for which each is specially adapted. Experience will show that wood which is admirably fitted for one kind of work is by no means suitable for another. The prices, too, of different sorts of wood differ as much as their qualities, and it is desirable that the amateur artisan should become acquainted with these to some extent, that he may know what he is about when he is making purchases of his timber merchant. A knowledge of the prices of the different kinds of wood used in building and furniture making will also be useful to him in other ways. For example, if he intends to put up even so unambitious a structure as a weather-boarded shed, he can, after making his plans and working drawings, calculate to a nicety the quantity of wood that will be wanted, and its cost at the timber yard; and if he finds that the job will run into more money than he expected, he can modify his plans and the mode of structure to suit his pocket.

Working Drawings.

We would urge strongly on the amateur artisan the necessity of preparing careful plans and working drawings to scale of any piece of work that he is about to take in hand, whether large or small, before he attempts to put it in hand. It is an old but true saying, that "Well begun is half done," and the worker in wood or stone or any other building material will be led to appreciate its truth and wisdom when he finds how helpful the making of correct and careful plans and drawings will be to him in the actual performance of the work in question. The whole mode of procedure—what he has to do and how he must do it—will be clearly fixed in his mind before he even touches the material which he is about to work up into the desired form or object, and he will always find the execution of the work to be quicker or slower, according to the extent to which he has previously worked out his plans in his mind, and committed them to paper.

Kinds of Woods Generally Used in Ordinary Carpentry.

Of all the different kinds of wood, deal, or pine, is that with which the amateur will be most frequently employed, and of which it is most necessary that he should know the prices and sizes at and in which it can be procured at the timber yard. We shall now endeavor to convey some idea of the nature of a few common kinds of wood, and the purposes for which they are or may be used.

THE ASH is a hardy deciduous tree, found generally in northern latitudes. In color the wood is greenish white when young, but the grain of timber cut from old trees is often dark and beautifully marked. When in this condition it is frequently used by the cabinet-maker. Its toughness, elasticity, and closeness of grain render the wood useful for making the frames of carriages, agricultural implements, felloes of wheels, etc. Hammer-handles and billiard-cues are frequently made of Ash, as well as the handles of croquet-mallets, and it is much used by coopers. It admits of being bent almost double without snapping, and on that account it is well adapted to be used for curved work.

THE BEECH, a hardy deciduous tree, is found in the northern States and Canada. The color varies; it is mostly light or whitish brown in tint, but is found in all shades of brown, deepening at times to black. The wood is fine and straight-grained, and is, in consequence, easily worked. The grain resembles that of mahogany, and it is often stained to represent it. It is used in the manufacture of furniture-tables, beds, and chairs being made of it. It may be stained to imitate ebony and rosewood.

The BIRCH is a forest tree of graceful appearance, found in cold and temperate regions, and on elevated situations, such as the sides of mountains in warmer countries. The wood is white, firm, and tough, and is used especially in northern countries for making wheels, casks and tubs, and in turnery.

The wood known as CHESTNUT is derived from two widely different kinds of trees—the Horse Chestnut and the Spanish or Sweet Chestnut. The white brittle wood of the Horse Chestnut is used by turners in making fancy goods. The wood of the Sweet, or Edible, Chestnut, is hard and durable, and beautifully grained and variegated. Furniture is sometimes made of it, and it is used with effect for decorative purposes in building.

The name of PINE is given to the timber of a great variety of cone-bearing trees, although the deal or pine cut from different trees varies considerably in quality and general utility. It may be broadly distinguished as Red or Yellow Pine—for the names are indifferently used—and White Pine. In the one kind, the ground color of the wood is yellow, diversified with markings of pale red; in the other kind, the wood is of a whitish color, whence its name. The American White Pine is highly esteemed in carpentry work from its softness and the ease with which it can be worked. While not strong, it is durable. The difference in the two kinds of wood is this: the grain of the Yellow Pine is generally very straight and free from knots, and it is very durable, though it is soft and easily worked. This renders it peculiarly appropriate for all building purposes, whether in the construction of houses or ships. The great height and straightness of the pine renders it well suited for the masts of ships; and when stained and varnished the timber presents a handsome appearance for joiners' work in houses. White Pine is harder and not so straight-grained as Yellow Pine, and it is generally full of knots. The variety known as Silver Fir is used for flooring, and also in the manufacture of household furniture.

The OAK. The best Oak timber in the world is grown in America and Great Britain, from whose forests, until iron came so much into use for ship building, all the Oak was derived for the splendid fleets which have commanded the sovereignty of the seas. Although the grain is somewhat open—too open, indeed, for the purposes of the turner—the wood is extremely hard and durable, but difficult to work, and apt to take the edge pretty quickly off the workman's tools. The wood is dark in color and susceptible of a high polish. It is much used in house building, for houses of the better class, for floors, staircases, doors, the paneling of rooms, etc., and for tables, chairs, sideboards, and other pieces of household furniture.

The POPLAR. This wood is white, soft, and brittle, and is chiefly used in the manufacture of boxes, cases, and children's toys. The softness of the wood causes glass grinders and lapidaries to use horizontal sections as polishing wheels. The wood of the poplar is not liable to shrink, warp, or swell. The fret-sawyer will find it useful for backgrounds, linings, and veneered work.

The wood of the WALNUT is extremely useful and valuable, and is used in the arts for many purposes, of which not the least important is that of the manufacture of ornamental furniture. Its only drawback is its want of density, which renders it liable to injury from blows and rough usage. It is as useful to the turner as to the cabinet-maker, and works well in the lathe. It is desirable to get walnut wood from old, well-grown trees, for the older the tree the more beautiful and diversified are the markings of the wood.

For fret-sawing and all kinds of cabinet work, the wood known as BLACK WALNUT is the most suitable. Unless well seasoned by kiln-drying, or some similar process, it is apt to warp and split. It will take a beautiful polish, and still look well. Plain oiling seems to harden the fibre, and a dead polish will often show better in the work than though it shone like a mirror. This wood ought never to be varnished, since this gives a common look to the article, as it always brings out the grain.

The WHITE WALNUT, known in the United States as the *butternut*, is a pretty wood, but soft. It cuts clean, and is adapted for many kinds of work, which, however, must not be delicate in design.

It has the same grain as Black Walnut, stains well, and shows oiling to advantage.

Strength and Breaking Strain.

The most important qualities of building material necessary to consider are its strength and breaking strain or breaking weight, and the amount of pressure which can be safely laid upon it in accordance with its form, thickness, position, etc. It has been ascertained by actual experiments that the strength of a beam or girder of timber, and hence of any piece of timber, whether large or small, increases directly as the width, and as the square of the depth. Thus, if a piece of wood measuring three inches in breadth and three inches in depth—that is to say, nine inches square in section—will bear a certain weight, a beam six inches broad and three inches deep will bear *twice* the weight; but a beam three inches broad and six inches deep will bear *four* times the weight. The strength is also inversely as the length. If two beams of equal breadth and depth be taken, but one of them be twice as long as the other, the longer beam will only bear half the breaking weight that the shorter one will sustain, or, in other words, will be only half as strong.

It will now be clear why, in laying joists to sustain a floor, the timbers are so placed as to have considerable depth from top to bottom, while the breadth is comparatively narrow.

A continued strain tends to weaken the power of resistance in a beam, and the power will be lessened still more when the weight is variable, or is a rolling instead of a dead weight. The nature of the wood must also be taken into account: thus, some in which the fibre is long and the grain straight will bend to a very great degree, while others in which the grain is short and close will scarcely bend at all, but break suddenly. In framing timber, as the carpenter is called upon to do, all these points must be taken into consideration.

The instantaneous breaking weight of any kind of wood is the weight under which it will give way and break when loaded with the weight in the centre. It has been said that the load with which a beam may be weighted without risk should never exceed more than *one-third* of the breaking weight; but it is better and safer never to let the load exceed *one-fourth* of the breaking weight. Indeed, it is argued that timber is permanently injured if more than this is applied to it. The best authorities on carpentry say that a load cannot be looked on as safe if it exceeds *one-fifth* part of the breaking weight.

It is by no means a difficult thing to find the breaking weight of every piece of timber, and, this being known, the load that it will sustain without injury; this as it has just been shown, estimated by different authorities at from one-fifth to one-third of the breaking weight. The following is a general rule for finding the breaking weight in the middle for girders of wood supported at both ends:

RULE.—*Multiply the breadth in inches by the square of the depth in inches, and divide by the length of bearing in feet. The result obtained, when multiplied by a certain constant or invariable quantity, for the kind of timber under consideration, gives the breaking weight in the centre in hundredweights.*

This constant or invariable quantity, which has been determined by a series of experiments, is stated by Barlow to be: For Ash, 6; for Oak, 5; for Pitch Pine, 5; for Red Pine, 4; for White Pine, 3.

TOOLS USED IN CARPENTRY

An able author and artisan, describes the tools used in carpentry in groups as follows, namely, "Striking tools, saws, cutting tools, planes, boring tools, pincers, guides, and auxiliary appliances." It seems possible, however, to render the classification more complete by the following arrangement:

I. STRIKING TOOLS.
   1. *Tools that are used for striking only, as Hammers and Mallets.*
   2. *Tools that are used for striking and cutting, as Hatchets, Axes, Adzes, etc.*

II. RASPING TOOLS, OR TOOLS THAT ACT BY ABRASION.
   1. *Saws of all kinds, for cutting wood.*

2. *Rasps and Files, for smoothing, shaping, cutting, etc.*

III. Paring Tools of all Kinds.
1. *Planes of various kinds, for smoothing, moulding, etc.*
2. *Spokeshaves and Drawing-knives.*
3. *Chisels and Gouges.*

IV. Boring Tools.
1. *Bradawls, Gimlets, and Augers.*
2. *Brace and Bit, sometimes called Stock and Bit.*

V. Holding or Grasping Tools.
1. *Pincers and Pliers, Nippers, Spanners, and Wrenches.*
2. *The Vice, including Hand-vice, Bench-Vice, etc.*

VI. Tools of Guidance and Direction.
1. *The Carpenter's Rule and Chalk Line.*
2. *The Square, Bevel, Gauge, Mortising-Gauge, Mitre-Box.*
3. *Spirit Level, Straight Edge, Plumb and Level.*
4. *Compasses and Callipers.*

VII. Miscellaneous Tools not subject to Classification.
1. *Screwdriver, Nail-punch, Scriber, Rymer or Reamer, etc.*

Striking Tools.

Of hammers, the amateur should possess three—namely, an ordinary joiner's hammer for heavy work, a lighter one of the same form for medium work, and a light hammer with a small face, usually known as a "ladies' hammer," for driving brads and small fine nails into small light work. If he determines to do any veneering, there is a special kind of hammer used for this purpose which must be obtained.

Many other kinds of hammers are used for various kinds of work, but those named will be sufficient for the amateur's purpose.

In striking a tool with a wooden handle, as a chisel, the wooden mallet, not the hammer, should be used, a convenient size having a head 6 inches long and 2½ by 3½ inches wide in face. The amateur must remember that tools of a medium size are always likely to be most useful to him.

The tools that are used for cutting as well as striking, whose blow severs or splits as well as drives forward, are the adze and axe, or hatchet. The adze is not likely to be required by the amateur; it is used chiefly by shipwrights in ship building, and sometimes by the carpenter. It is with the Axe or Hatchet that the amateur artisan is more immediately concerned, and this is a tool that he cannot do without, for it may be made useful in a variety of ways. In framing timber together it can be used as a hammer, instead of the heavy carpenter's hammer, which the amateur need not place among his tools; and for sharpening stakes or cutting down timber to the size required in the rough, or for splitting pieces of wood, it is invaluable. It should be kept well sharpened, for a blunt axe is useless for any purpose, so far as cutting is concerned, except splitting firewood.

Rasping Tools.

Rasping Tools are those which act by abrasion or rubbing away the material to which they are applied.

There are many kinds of saws in use, but those which the amateur artisan will most require are the Hand Saw, Tenon Saw, Dovetail Saw, Keyhole Saw, and Frame Saw. These are sufficient for all ordinary work. To these, in order to save wear and tear of the hand saw, a saw called a rip, or ripping, saw may be added. This saw has large, triangular teeth, and is used for sawing along the grain. It is therefore useful for sawing planks, battens, and boards the way of the grain; the work being done more expeditiously with a rip saw than a hand saw.

The Hand Saw is generally useful, and will serve the purpose of a rip saw or a panel saw, a finer kind of saw used by joiners.

The Tenon Saw is used more especially for cutting across the grain of the wood, and leaves the surface of the wood that is divided by it as smooth as is possible when the nature of the operation is considered. The blade is of necessity thin and fine, and, in order to keep it straight when in use, it is inserted into a back of iron or brass. It is worked by means of a handle differing in

form from that of the hand saw. A tenon saw to be really useful should be from 14 to 18 inches in length.

The DOVETAIL SAW and the SASH SAW are nothing more than tenon saws of small size, being identical with these in shape and make. They range from 8 to 12 inches in length.

The KEYHOLE SAW consists of a long narrow movable blade. The handle is pierced throughout with a narrow slit sufficiently large to allow of the easy passage of the saw. It is useful for cutting out curved work, while rough coarse fretwork may be done with it, and perforated work for rough carving.

RASPS, generally speaking, are used in carpentry for cutting away or smoothing wood, or for wearing away the sharp edge left in a circular hole that has been cut out with the keyhole saw, so as to impart a bevel to it sloping from above to the under part. A rasp is flat on one side and slightly convex on the other, and is covered with fine projecting points beaten up by a mallet and punch. They are of different degrees of roughness.

The FILE, whose ridges are finer than those of the rasp, is used for cutting metal and sharpening saws.

Paring Tools.

PARING TOOLS, or tools which are used for cleaning away the rough, ragged surface left by the teeth of the saw and rendering wood smooth and even, or otherwise for cutting wood into various forms and shapes, are frequently called *edge tools*, as they present a sharp, keen edge. Indeed, if they are blunt in the least degree they are not fit for use. Watch an artisan at his work, and you will see him frequently rub his plane-iron or chisel on the oil-stone in order to sharpen it. An amateur, especially a beginner, in nine cases out of ten either does not think of doing so, or altogether forgets that there is any necessity for it, and this is one of the chief reasons why amateur's work is often so badly done.

It is important for the amateur to buy none but good tools, and to keep them under lock and key. He must supplement this by keeping them clean and free from rust, and learning to whet the edges of all cutting tools when they show signs of dullness.

The tools that are comprised in the first group of paring tools are Planes. Of these there is a great variety, as formerly, before molding was made by machinery, every different pattern required a different plane or plane-iron. The planes that are most necessary to an amateur are a jack-plane and a smoothing-plane.

The JACK-PLANE is from 15 to 18 inches long and 2½ inches broad, and about the same in depth. Near one end is a handle projecting upwards, and near the other a hole for the reception of the plane-iron, which is held in its place by a wedge. Planes of this description, and smoothing-planes also, are usually made with double irons; that is to say, with two irons held together by a short screw.

The SMOOTHING-PLANE is different from the jack-plane in shape, being about 8 inches long and 2½ inches to 3 inches broad, in the widest part where the iron issues from the wood, tapering to a width of about 2 inches in front and 1¾ inches behind, so that it may be more easily held in the hand. The jack-plane is used for taking the rough surface from the sawn timber, and when this has been removed the smoothing-plane is used to make the surface of the wood perfectly smooth and even.

The SPOKESHAVE and the DRAWING-KNIFE are the tools that are comprised in the second division of paring tools. The drawing-knife is useful for reducing the size of any piece of wood that it may be inconvenient to cut down in any other way. The spokeshave, as its name implies, may be used for imparting a smooth surface to the spokes of wheels, but it is also useful for smoothing down any surface that is not required to be perfectly flat. Thus, a beveled edge may be given to a round hole of any large size cut in a piece of wood. The drawing-knife is always worked towards the operator, but the spokeshave may be used in a direction either towards or from the person who is using it.

The third and last division of paring tools comprises CHISELS and GOUGES. In reality the plane in its simplest form, as

seen in the jack-plane and smoothing-plane, is nothing more than a chisel of considerable width set in a block of wood, which serves as a guide, and by means of which the operator is enabled to work the tool with greater ease and accuracy. A chisel is a flat and thick piece of steel, of which the cutting end is ground to a bevel, in order to obtain a keen edge, while the other is fashioned into a tang, with a projecting shoulder, which fits close against the wooden handle into which the tang is inserted. The gouge differs from the chisel in being hollow instead of flat. Chisels are distinguished as firmer chisels, paring chisels, mortising chisels, and turning chisels. It must be said, however, that the last-named variety differs from the other kinds of chisels in being ground to a bevel on both sides instead of one side only.

It may be mentioned that the tool called a *cold chisel* is a long piece of steel, beveled on both sides at one end to a blunt edge, used by carpenters and others to knock out a hole in a wall of stone or brick for the insertion of a wedge, the end of a piece of timber, etc.

About half-a-dozen chisels and the same number of gouges will be the utmost number that the amateur will require; and, for both chisels and gouges, the widths to be selected may be placed at ⅜ in., ½ in., ¾ in., 1 in., 1¼ in., and 1½ in. The ordinary carpenter's chisels should be purchased first of all. A few paring chisels can be added to the stock at any time if required.

Boring Tools.

The tools comprised in the first division of *boring tools* are bradawls, gimlets, and augers. These tools are, for the most part, extremely simple in construction, the bradawl being a piece of steel sharpened at the end and fixed for convenience of use in a wooden handle; and the gimlet a piece of steel so fashioned at one end that it may take hold of, and cut its way into, timber, and having a small piece of wood or iron attached crosswise at the other end, which serves as a lever to turn the steel shank of the tool, and press it into the wood. The auger is only a gimlet on a large scale, the cross handle being turned by the operator with both hands, which are transferred from end to end of the handle at every half-turn of the tool.

The Bit-brace or Stock-and-Bit, is the principal boring tool, and, indeed, the only tool of this kind with which the amateur artisan need concern himself. There are breast-drills, fitted with a plate to hold against the breast, steadied with a handle held in the left hand, and having a chuck at the further extremity, in which the drill is placed and caused to revolve at a rapid rate by a large toothed-wheel working in a smaller wheel, the former being turned by a handle held in the right hand.

Other Tools.

In good carpentry everything depends on accuracy of measurement of parts, and fitting the parts together at right angles, or at the required angle or bevel. For the attainment of these most necessary requisites, *tools of guidance and direction* of various kinds are used, without which it would be impossible even for a skilled carpenter or joiner to do his work, and fit the various pieces together with the nicety that is essential in all operations of this nature. Thus, for setting out a long straight line in ripping a slip of wood from a board, a *line and reel* is required, and for the measurement of any length into parts, or to measure any required length, breadth, and thickness, the *carpenter's rule* is needful. For cutting off the end of a board at right angles to the edge, or for mortising, etc., the *square* must be used, and for cutting wood at any given angle to the edge, the proper line of direction for the saw must be marked by aid of the *bevel*. For cutting notches in wood, or for cutting or planing down pieces of wood to the same thickness, the necessary guide lines must be marked by a *marking gauge*, while in mortising the *mortise gauge* is used.

For joining pieces of wood at right angles, as in making a picture-frame, recourse must be had to the *mitre box;* and for subdividing any given space into smaller spaces, or marking out circles and sweeps of various diameters, the *compasses* must be used. In turning, to make sure of having

the diameter of various parts of the work in harmony with the pattern, these diameters must one and all be tried and regulated by the *callipers* as the work goes on. In bringing horizontal bars, shelves, etc., to a true level, the *spirit level* must be used; and in fixing a post in the ground, or a piece of quartering to the wall, the *upright level* with cord and plumb-bob. A *straight-edge* is useful for testing the nicety and accuracy with which wood has been planed up, and for other purposes. We name these, though the amateur is not likely to need them all. There are many miscellaneous tools and appliances used in carpentry and joinery which are not subject to classification. Among these we may include the screw-driver, the nail-punch, the reamer or rymer, the scriber, the cramp, the glue-pot, and the oil-can. Sand-paper and emery-paper must also be noticed. There is another appliance called the bench holdfast, which is used to hold wood firmly down on the carpenter's bench when necessary.

These tools are so simple and easily obtained that a description of each is not necessary. In their selection *cheapness* is not to be considered, but accuracy and convenience.

The Glue-Pot.

The GLUE-POT should be in every house, whether the tenant turns his attention to household carpentry or not. So many little odd jobs can be done by its aid, that, if nothing more than a hammer and screw-driver be kept, a glue-pot should be purchased. For example, a piece of veneer may come off a looking-glass frame, or any piece of furniture, and may be mislaid or lost before a carpenter happens to be at work in the house, putting these and similar little matters in order. Now, if the piece of veneer is lost it will be a costly business—that is to say, costly in proportion to the actual damage—to replace it, and if the missing piece is not replaced the appearance of the piece of furniture is spoiled, and its value considerably deteriorated. But, if a glue-pot is at hand, the damage may be instantly repaired, and if the mending is carefully done, as it ought to be, the piece of furniture is little the worse for the mishap.

The glue-pot is a pot within a pot, the outer and larger one being of iron, and the smaller one of copper or iron, as the case may be. The glue is broken up small, and placed in the smaller pot, which fits into the larger pot, the rim of the former resting on the rim of the latter. Water is placed in the larger pot, sufficient to nearly fill it when the smaller pot is put in. The pot is placed on or close to the fire, and as soon as the water boils the glue begins to melt, until it is reduced to a semi-fluid condition.

Recipe for Making Glue.

The following is a good recipe for making, or, rather melting, glue. It is given by an authority in "Workshop Receipts:" "Break the glue into small pieces, and soak from twelve to twenty-four hours in cold water; put the glue in the glue-pot, fill the outer vessel with water, and apply heat. For ordinary purposes it should run freely, and be of the consistency of thin treacle. The hotter glue is, the more force it will exert in keeping the two parts glued together; in all large and long joints the glue should be applied immediately after boiling. Glue loses much of its strength by being often melted; that glue, therefore, which is newly made is preferable to that which has been used. When done with, add some of the boiling water from the outer vessel to the glue, so as to make it too thin for immediate use. Put it away till wanted again, and by the time the water in the outer vessel is boiled the glue in the inner is ready melted and of the proper thickness for use. Powdered chalk, brickdust, or sawdust, added to glue, will make it hold with more than ordinary firmness."

To do any kind of work in carpentry and joinery, with blunted tools, in a creditable and workman-like manner is simply impossible. The professional carpenter and joiner will frequently stop in his work to put his plane-iron and chisel on the oil-stone—for he is well aware of the importance of having a keen edge to all cutting tools of this description—and he will take care to keep his saws sharpened and fit for use. It is necessary that the amateur artisan should imitate the regular mechanic

in this essential duty of keeping his tools in a fit condition to do the work that is required of them.

Directions for Sharpening Tools.

Of course all *cutting tools* must be provided with a keen edge, and this is obtained by grinding them to a proper bevel on the grindstone and afterwards rubbing them on the oil-stone. Among *striking tools* the adze and hatchet will require sharpening on the grindstone.

For sharpening or rather for grinding edge tools such as plane irons and chisels, the grindstone is also necessary, finishing off on an oil-stone. It is necessary that the cutting edge should be made as straight and true as possible.

The following directions are for grinding edge tools, which the amateur will do well to follow implicitly, as it is given by a practical workman of great experience. "In grinding plane irons, chisels, and similar tools, *the stone should turn towards the operator*, and the tool should be held very firmly and quite squarely upon the stone, at a point sufficiently near its upper part to allow the tool to be in a nearly horizontal position, while its bevel lies flat upon it. If it is held too low, so that its handle points downwards, the water from the stone will run down the hands and arms, which is decidedly disagreeable, especially in winter." In addition the tool cannot be so firmly held nor the work so readily seen. Keep the edges of the stone in use by constantly traversing the tool across its face, and never try to hurry the work by grinding to a more obtuse bevel than that made by the manufacturer. This is, indeed, generally rather more obtuse than it ought to be, and carpenters reduce this angle, and then the second bevel, formed by the oil-stone, restores it correctly. In grinding planes and chisels, especially the first, it is as well for the amateur to make use of a square to test the correctness of the edge, otherwise the latter may not be truly at right angles to the side of the tool.

The Carpenter's Bench.

One of the most indispensable essentials to the performance of operations in carpentry and joinery is the carpenter's bench. Nothing can be fairly done without it—except sawing, for which the stool is wanted; or mortising, which may also be done on a couple of stools or trestles, although small mortises may be cut on the bench. Planing must be done entirely on the bench, the surface of a board being laid flat on the top of the bench and butted against the bench-stop. In planing the edges, the board must be laid along the side of the bench, being supported on pegs (for the reception of which holes are made along the side itself) in the middle, and at one end nearest the operator, while it is gripped and held tightly against the side by the bench-jaw or vice at the other end.

How to Hold and Handle Tools.

Having provided oneself with the necessary tools and work bench, or such a selection from the whole as may best meet his requirements, the next thing to be done is to learn how to use them. It is next to impossible to do this from printed instructions; and on the principle that a little showing is better than a great deal of telling, the best advice that can be given to the amateur on this head is that he should arrange with some skilled artisan to give him a few practical lessons in the method of holding, using, managing, and sharpening his tools, and the everyday operations in carpentry and joinery, such as sawing, planing, scarfing timbers, cutting rebates, mortises and tenons, dove-tailing, mitring, etc., etc.

THE DIVISIONS OF THE BUILDING TRADE

When any art or manufacture begins to assume importance, and there is a continually increasing demand for the articles, be they what they may, that are made by those who are engaged in it, it has been invariably found that in due proportion to its growth the art or manufacture, as the case may be, becomes divided and even subdivided into

many and various branches, until it is well-nigh impossible to carry the subdivision of the trade to a greater extent.

The building trade is an aggregation of various trades and their separate departments, which have become affiliated, as it were, and grouped together for the better attainment of the end desired.

Taking each a prominent and active part in the building trade we find the excavator, bricklayer, mason, pavior, slater, plasterer, carpenter and joiner, sawyer, ironmonger, smith and founder, zinc-worker, wire-worker, bell-hanger, gas-fitter, plumber, painter, decorator, gilder, paper-hanger and glazier—a goodly array of tradesmen and artisans whose aid and co-operation is absolutely necessary in building and finishing a house.

Practical Knowledge of all the Trades.

It is in doing repairs of an ordinary nature that the amateur will find practical knowledge of the arts connected with the building trades of use to him, in the first place. Secondly, he will find it of equal value in constructing any small building for use or ornament, or for both, out of doors, or for making any appliance within doors; and thirdly, as it has been already urged, he will find it of even more value in enabling him to look after men who may be at work on his premises, and in seeing that the work is done in a proper manner.

Excavations of all kinds can easily be compassed by the amateur, and he will find no difficulty whatever in making and using concrete. In connection with this kind of work lies the making of walls and paths of all kinds, and no one will deny that it is of advantage to the amateur to know how to do these things. In building walls with brick and stone he will probably fail, and more particularly because it is by no means as easily done as other kinds of work that fall more naturally within his compass; but, at the same time, it is desirable to know how to repair and "point" a piece of garden wall, as it is technically called; to fix a step that has become loose with cement; to put a piece of paving to rights and relay a loose paving-stone; and to repair a piece of plastering that has been displaced by damp or other causes.

Work in Metals.

Similarly he may not be able to accomplish much in smiths' work, but it is certainly of advantage to be able to work in iron so far as to be able, by aid of fire, hammer, and anvil, to beat a piece of iron into any shape that may be required, to drill a hole, and to turn a screw, which operations come under the category of forging. Casting, which necessitates the melting of metal in a furnace and running it into a mold, is an operation which may well be left to the iron-founder; but it is useful to possess an iron ladle, and run in lead round an iron bar or rail that has been loosened in the socket cut for it in a stone coping or step.

Zinc-working, as far as making a simple shoot and covering a small flat roof are concerned, and wire-working in the construction of a wire trellis, hanging basket, sieve for sifting earth or cinders, or repairing such articles, are far more practicable; and soldering and simple working in sheet metal are matters with which the amateur may readily make himself acquainted. Plumbing and gas-fitting, which if badly and inefficiently done may involve serious consequences, are best left to professional artisans; but it is as well to know how to stop a leak in a pipe on an emergency, how to take down a gasalier, clean it, and put it in its place again, and how to substitute new gas-burners for old ones with safety.

Decorative Work.

In the decorative portions of the building trade he will find no very great difficulty. House-painting—that is to say, covering wood or metal with a uniform surface of oil paint—may be easily managed, and to a person possessed of taste and manual skill the work done by the decorator will present no very great difficulty. Paper-hanging requires nothing more than care and a certain amount of manual dexterity. Glazing is more easily done than most of the work that has been mentioned, but as it involves handling putty it is not, perhaps, very desirable work. Still, it is work that should be taken up and carried out by the amateur,

as he can put in a pane of glass for about half the price at which a professional glazier will do it if the work be such as can be done at the shop, as the glazing of a light for a pit-frame, etc., and for from one-sixth to one-fourth the price charged if it be a window.

Practical Points in Excavating.

The following facts with regard to excavator's work, may be of use: "In loose ground a man can throw up about 10 cubic yards per day, but in hard or gravelly soils 5 yards will be a fair day's work. Three men will remove 30 yards of earth a distance of 20 yards in a day. A yard (cubic) of concrete requires about 3 hours' labor to mix and throw in, or if in heavy masses, and the materials handy, about 2 hours. With regard to the weight of materials, 19 cubic feet of sand, 18 ditto clay, 24 ditto earth, 15½ ditto lime, 20 ditto gravel, will each weigh one ton. A cubic yard of earth before digging will occupy about 1½ cubic yards when dug. Sand and gravel does not increase more than one-third as much as earth in bulk when dug, but will decrease in height one-fourth more than earth. A wheelbarrow (that is to say the broad, shallow barrow used by navvies) holds $\frac{1}{10}$ yard cube. A cubic yard, or 27 cubic feet of earth, is a single load, and contains 20 bushels; 1 cubic yard of gravel contains 18 bushels in the pit; when dug it will increase nearly one-third in bulk, but will subside nearly one-fourth in height, and decrease one-fifth in bulk when formed into embankments. When earth is well drained it will stand in embankment about 1½ to 1."

This will prove a useful rule for the amateur in throwing up embankments, mounds, etc., in his grounds or garden. If revetted, to use an engineer's term, or covered with turf, the inclination may be greater, because the roots of the grass bind the surface earth together and keep it from being washed down by heavy rains. This will be evident from an inspection of the side of a hedge or bank covered with turf which may be inclined to the horizontal base line at angles ranging from 10° to 20°.

Making Good Concrete.

Concrete, now so much used in forming the foundations of buildings of every description, and even the walls themselves, is a mixture of cement and sand, gravel, broken stones, brick rubbish, or similiar materials in the proportion of one part of cement to five or six parts of any of the other ingredients that are used in its manufacture. Good lime is often used instead of cement, but the amateur, if he uses lime at all, is advised to use cement with it in equal parts. The cement, being the substance that binds the gravel ballast, etc., together into a solid mass impervious to water, is technically called the *matrix*, and the substance that is added to the lime is called the *aggregate*.

It may be said that any waste material of a hard nature may be used as aggregate in making concrete, sand and gravel of all kinds, including pea or fine gravel, pit gravel, river gravel, ashes, cinders, and coke, lime chippings, flints, old stones and bricks, especially when broken, broken earthenware and stoneware, and rubbish from the brickyard may all be used. Slag, too, the refuse of the iron furnaces, can be made available whenever it can be obtained. It should not be used in too large sizes. Pieces about the size of stones ordinarily used for mending roads, or such as will pass through a ring of 2½ inches in diameter, are best suited for the purpose when the material is broken up on purpose for making concrete.

Any of the various cements in general use may be used in the manufacture of concrete, but the amateur is recommended in all cases to use Portland cement.

Quantities of Cement Used.

When made into stucco for covering a wall, the following table will show the extent of surface that a bushel of cement may be made to cover when used pure or with various proportions of sand, and at certain thicknesses:

1 bushel of cement will cover 1⅛ yards 1 inch thick, 1½ yards ¾ inch thick, 2¼ yards ½ inch thick; 1 bushel of cement and 1 of sand, 2¼ yards 1 inch thick, 3

yards ¾ inch thick, 4½ yards ½ inch thick; 1 bushel of cement and 3 of sand, 3½ yards 1 inch thick, 4½ yards ¾ inch thick, 6¾ yards ½ inch thick.

As cement will not keep, especially in a moist atmosphere, the amateur, when he requires a small quantity for repairs, is recommended to buy just so much as he wants and no more.

In making concrete, it is important, in the first place, that the aggregate, be it what it may, should be deposited on a clean place—if on old boards, as scaffold boards, so much the better—so that no dirt may get mixed up with it. The concrete itself should be made on boards, nailed together on ledges or on three putlogs placed on the ground parallel to one another, forming a rough platform. The aggregate and the cement or lime used as the matrix must then be placed on the boards, the aggregate being measured out first, and the proper proportion of concrete to the aggregate being also measured out and thrown upon it. The heap is then wetted with water poured over it from a large water-pot fitted with a fine rose, and the whole is then mixed until the materials are thoroughly amalgamated.

Bricklaying.

BRICKLAYING is in itself an apparently simple process, inasmuch as it consists merely in laying or disposing regular and similar rectangular pieces of baked clay one upon another, layer upon layer, until a certain height is reached, spreading a composition of lime and sand called mortar between each layer, which hardens and connects the bricks together in a tolerably solid mass. There is, however, much more skill in bricklaying than is apparent at first sight, and really good bricklaying cannot be done without practice any more than other building processes.

The tools requisite in bricklaying are a large, strong steel trowel, with which mortar may be spread and bricks chopped asunder or reduced to any extent that may be required in order to produce a perfect bond. Mortar is carried up the ladder, and on to the part of the scaffolding where the bricklayer is at work, by his attendant laborer, in a vessel called a hod, which is shaped like a box, open at one end and cut across diagonally, and fitted at the bottom angle into a short pole. Then a small trowel for pointing, and a mortar-board to hold in the hand, on which the mortar or cement is carried.

A brick is accounted to be 9 inches long, 4½ inches broad, and 2½ inches thick, the breadth being half the length, and the thickness rather more than half the breadth, or one-fourth the length; an arrangement which renders bricks more convenient to use, owing to the correspondence and harmony of proportions in length, breadth, and thickness. The equivalents of the thicknesses of walls enumerated in terms of bricks will, therefore, be, when expressed in inches, ½ brick = 4½ in.; 1 brick = 9 in.; 1½ bricks = 13½ in.; 2 bricks = 18 in.; 2½ bricks = 22½ in., etc. There are many different kinds of bricks, embracing the three classes of building bricks, fire-bricks, and clinkers, or paving bricks.

Mortar for Brickwork.

Bricks are cemented together with mortar, which is a mixture of lime and sand brought to a pasty consistence by the addition of water. When it is desired to make brickwork as strong and durable as possible, the mortar should be made of cement, or a little cement should be added to the lime. The following are the proportions:

Lime and sand, and cement and sand, lose about one-third their bulk when made into mortar, and lime and Portland cement both require one-third their bulk of water to mix. For a rod of brickwork (containing 306 cubic feet and needing 4,352 bricks), 71 cubic feet of mortar will be required, and to make this quantity are required 1½ cubic yards of unslaked lime and 3 of sand; or 1 cubic yard of stone lime and 3½ of sand; or 36 bushels of cement, and the same quantity of sharp sand. Lime or cement and sand, to make mortar, require as much water as is equal to one-third of their bulk, or about 5½ barrels for a rod of brickwork built with mortar.

The mortar used by the old builders was far more durable than the mortar used in

the present day. It hardened into a mass which offered greater resistance to the weather than even the stone itself that it was used to cement together.

The cost of brickwork may be easily calculated from the above memoranda.

Soldering and Brazing.

For zinc-working, plumbing, gasfitting, and all kinds of work in sheet metal, a knowledge of the processes termed soldering and brazing is necessary. By these processes the edges of pieces of sheet metal are joined together, and although it is better for the amateur, for safety's sake, to have all zinc-working that he may require in the way of covering roofs, making zinc pipes, lining wooden cisterns, and similar operations, done by the professional zinc-worker, and to call in the plumber and gasfitter to rectify any leakage in lead pipes or gasfittings, it is as well that he should know how to make a joint in metal, whether sheet or pipe, and possess the few appliances necessary for doing so. If he can do no more than repair tin pots, kettles, etc., it will be of advantage to him, for the itinerant tinman seldom does his work effectually, and seems never to be at hand when his services are most required.

First, then, with regard to soldering and brazing. They may both be described as methods of uniting pieces of either the same or different kinds of metal with a strong and, if necessary, water-tight joint.

To effect this by the first-named operation, namely *soldering*, a compound metal called solder is used. This composition is melted, but the metals to be united do not require to be heated otherwise than through contact with the melted solder.

In the operation of *brazing* the metals to be joined must be raised to the melting point of the brazing composition, which is soft brass. Although this makes the strongest joint, the necessity for exposing the articles to such a great heat renders this operation inapplicable to many purposes.

Soldering is very useful for joining copper and copper, copper and brass, copper and iron, brass and brass, brass and iron, tin and tin, and tin and any other metal. If the joint has to stand a rather high degree of heat—such, for instance, as the seams of a small copper steam boiler—a *hard* solder must be used. By hard solder is meant one that only fuses at a high temperature; a *soft* solder, on the contrary, fuses at a low degree of heat.

The following are the compositions of some of the most useful of solders and alloys, with the degree of heat required to melt each:

Tin.	Lead.	Bismuth.	Mercury.	Melts at
1 part	25 parts	. . .	. . .	558° Fahr.
2 "	1 "	. . .	. . .	340° "
2 "	2 "	1 part	. . .	292° "
5 "	3 "	3 "	. . .	202° "
5 "	3 "	3 "	3 parts	122° "

How Soldering is Done.

The surfaces to be united must be thoroughly cleaned and brightened. Without this the metal will not adhere. The soldering iron must be warmed sufficiently to melt the solder; it must not be made red-hot, because the solder will not "hold to it."

Whilst the iron is warming, *tin* the surfaces by brushing them over with muriatic acid, dipping them into melted solder, and quickly rubbing off the adherent metal. This, if done well, will leave a thin coat of solder. When it cannot be done thus, the surfaces must be tinned by means of the soldering iron. In this case they must be coated or washed with the acid as before, but the solder must be melted on the places required with the hot iron.

When tinned, the surfaces should be brought close together, a little acid rubbed along the joints, and the iron dipped in the acid and put against some solder, so that the melted solder will stick to the iron. The iron must now be applied to the joints, and drawn slowly along in such a manner that the metal between the joints is melted, and the joints filled up. A little practice will soon make the amateur tolerably skilful in doing this. The muriatic acid, or spirit of salt, as it is sometimes called, must be *killed*, or rendered neutral, before it is used, and this is done by putting one or two small pieces of zinc into it and allowing it to expend all its energy on this. Killed acid is much more effective than the raw or pure acid. Sometimes resin is used instead of the acid; but the neutralized acid is

preferable, because it does not leave the work in such a mess as resin.

Should it be desirable for the solder not to adhere to any portion of the article, a paste must be made with whiting and water, and put about those places; this paste will harden with the heat, but can be removed after the soldering operation is effected.

Indoor and Outdoor Painting.

Nearly all that has been said with regard to operations in the building trades is connected with construction, but here we shall speak chiefly of decoration. It has long been found necessary to protect wood and iron from the ill effects of moisture by a hard exterior coating impervious to wet; and hitherto the best preservatives have been found to be paint and varnish, through which no wet can penetrate as long as they remain in a sound state.

In doing work of this kind, it is much better and cheaper to buy paints and varnishes ready mixed. One very good reason why the amateur painter should do this is that the paint which he makes himself is apt to take a long time to get thoroughly dry and hard; and sometimes, even after the lapse of several weeks, it is still sticky.

Before beginning to paint, all dirt and projections, such as lumps of glue, etc., must be cleared away with the putty-knife and duster. Then, if the work be new, all the knots in the wood must be killed with *knotting*, to prevent the turpentine in the knots from oozing out and spoiling the appearance of the painting when finished. Knotting is a preparation of red lead, litharge, boiled oil, and a little turpentine; the amateur is advised to buy the "patent knotting," which may be obtained ready for use. After the knotting, which dries and hardens very quickly, is applied, the *priming*, or first coat, is put on. This is made of white lead, with some drying material, and a little red lead to harden it. It is made very thin with oil, as unpainted wood or plaster absorbs the paint very quickly.

The Several Coats of Paint.

As soon as the priming is dry, all holes made by punching in the heads of nails, cracks, etc., must be stopped with putty. It is useless to attempt to do this before the priming has been applied, because putty will not stick to wood unless painted. After this has been done the *second coat* may be applied; and for new work the second coat of color should be made up chiefly of oil, because oil is the most efficient in stopping the suction of the wood; then a *third*, and even a *fourth coat*, may be applied. In laying on the color, the brush should be passed backwards and forwards and in every direction, to spread the color evenly and work it well into the wood, in the earlier coats.

Finally, the brush should be drawn up and down, or backwards and forwards, as the case may be, in the direction of the grain of the wood, taking care to leave no marks of the hairs of the brush. In painting a door, or any piece of work in which part is sunk and part raised, the mouldings or any bead-work should be painted first with a sash tool, and then the panels, styles, and rails with a brush. No coat should be laid on a previous coat until that coat shall be perfectly dry and hard; and before beginning to paint any piece of work, whatever may be the number of the coat, every particle of dust that may have settled on it should be carefully removed with the dusting brush.

The composition of the paint that is applied to old work, and indeed to wood generally, must depend upon the style or manner in which the work is to be finished. The first coat after the priming in new work should be paint in which the oil predominates over the turpentine; but for the first coat for old work the turpentine should be in excess of the oil. Paint mixed with oil in excess will present a shining surface when dry, but paint mixed with turpentine in excess will present a flat, dead, dull appearance. Therefore, when a shining surface is required, it is necessary that the under coat should be paint mixed with turpentine, the final coat being mixed with oil; but when the finishing coat is to be "flatting," as it is technically called, it must be laid over an under coat or ground color mixed with oil.

Removing Old Paint.

When the surface of a coat of paint, that is to say, of any under coat, appears rough,

especially in the case of patches in old work that have been retouched, the paint, when dry, should be rubbed down with fine glass paper until the roughness has disappeared. All loose paint, or paint that appears loose round the blister-marks, should be scraped away with a knife before the putty is put on. For cleaning old greasy smoke-stained paint limewash or limewater may be used. This kills the smoke or grease, on which no oil paint will ever dry and harden. Some will put a coating of weak size over the smoke and grease; the paint will dry on this, but it is very likely that it will soon crack and peel off.

It is not desirable to keep loading on coat after coat of paint on old work. It is better, when the incrustation caused by successive coats of paint has become very thick, to remove the paint entirely and begin *de novo*. There are various modes of removing paint. The professional painter will do it by the agency of heat, applying a flame to the surface of the paint; the heat soon softens the color, and it may then be scraped away with a knife.

Other Modes of Removing Old Paints.

RECIPE.—*To Remove Old Paint from Woodwork.* (1) Make a very strong solution of common washing soda, and apply it to the paint with a brush until the paint can be scraped away. (2) Apply naphtha to the paint in the same manner, giving it a second and even third damping with this substance until the paint yields. When soft enough scrape it away with a knife. (3) Slake 3 lbs. of stone lime in water, and then add to this 1 lb. of pearlash, and sufficient water to bring the whole to the consistency of thick cream. Apply the preparation with a brush, and leave it on the paint for from eighteen to twenty-four hours, when it will be found that the paint is softened and may be easily scraped off.

The amateur will find it necessary, perhaps, to do his painting work at intervals, often few and far between. If he leaves paint in the paint pot for some length of time, he will discover, much to his annoyance, on resuming work, that the paint is too hard and thick to be used. The addition of some oil and turpentine may save a little of it, but it will neither work pleasantly, nor, indeed, be worth using. Whenever paint must be put aside, a little cold water must be poured on the top of the paint. This prevents the evaporation of the oil, and keeps the paint all right for future use by excluding the air and preventing its action in drying and hardening the paint.

The Care of Brushes.

Similarly, brushes not in use should have the bristles or hair kept under water, that they may remain soft and flexible. It is better, however, when the amateur painter does not know how long it may be before he uses his brush again, to wash the color well out of it by means of a little turpentine, and then allow the brush to dry. When kept in water for some time, the constant soaking will rot the string and the bottom of the wooden handle to which the bristles are attached, and the amateur, on commencing painting, will experience the annoyance of his brush snapping off short like the end of a carrot.

Various Coloring Substances Used in Painting.

It will be useful to the amateur painter to mention the various pigments or coloring substances used in painting to produce different simple colors, and to follow these with a list of colors that are produced by combinations of two or more of these colors. White lead, a substance highly prejudicial to the health, both of those who manufacture it and those who use it, is mixed with all colors to tone them down and produce different shades, hues, and tints. There are, however, other mineral whites capable of supplying the place of white lead, which have the advantage of being non-poisonous pigments.

It will be convenient to classify each set of coloring substances, whether mineral or otherwise, under the color which it yields when properly mixed.

Table of Simple Coloring Substances.

(1) *Whites.*—White lead, including Ceruse and Flake White, Zinc White (oxide of zinc), Griffith's Zinc White (oxy-sulphide of zinc—non-poisonous), Spanish White.

(2) *Blacks.*—Lamp Black, Ivory Black, Blue Black, Vegetable Black, Patent Black.

(3) *Yellows.*—Chrome Yellow, Turner's or Patent Yellow, Naples Yellow, Orpiment, Massicot, Yellow Ochre, Raw Sienna, Yellow Lake.

(4) *Reds.*—Vermilion (crimson and scarlet), Carmine, Cochineal Lake, Madder Lake, Red Lead or Minium, Indian Red, Venetian Red, Spanish Brown, Purple Brown, Orange Lead, Burnt Sienna.

(5.) *Browns.*—Umber (burnt and raw), burned Prussian Blue, Manganese Brown.

(6) *Blues.*—Prussian Blue, Cobalt, Ultramarine, French Ultramarine, Blue Verditer.

(7) *Greens.*—Verdigris, Scheele's Green, Emerald Green, Green Verditer, Italian Green, Saxon Green, Brunswick Green.

Recipes for Tints Produced by Mixing Simple Colors.

Straw Color.—Chrome yellow and white lead.

Lemon Color.—Chrome yellow and white lead; more of the first than in straw color.

Orange.—Chrome yellow and vermilion (bright), yellow ochre and red lead (duller).

Buff.—White lead and yellow ochre.

Cream Color.—Same as for buff, but with more white.

Gold Color.—Chrome yellow with a little vermilion and white lead; or Naples yellow and realgar.

Stone Color.—White lead and yellow ochre, with a little burnt or raw umber.

Stone Color (grey).—White lead, and a small quantity of black.

Drab.—White lead, burnt umber, and a little yellow ochre (warm); white lead, raw umber, and a little black (cool).

Flesh Color.—Lake, white lead, and a little vermilion.

Fawn Color.—Same as for flesh color, with stone ochre instead of lake.

Peach Color.—White lead, with vermilion, Indian red, or purple brown.

Sky Blue.—White lead, Prussian blue, and a little lake.

Olive.—Black, yellow, and a little blue; or yellow, pink, lamp black, and a little verdigris.

Chestnut.—Light red and black.

Salmon Color.—Venetian red and white lead.

Chocolate.—Black, with Spanish brown, or Venetian red.

Sage Green.—Prussian blue, raw umber, and a little ochre, with a little white.

Olive Green.—Raw umber and Prussian blue.

Pea Green.—White lead and Brunswick green; or white lead, Prussian blue, and some chrome yellow.

Pearl Gray.—White lead, with a little black, and a little Prussian blue or indigo.

Silver Gray.—Same as for pearl gray.

Gray (common).—White lead and a little black.

Lead Color.—White lead with black or indigo.

Violet.—Vermilion, white lead, and indigo or black.

Purple.—Violet as above, with the addition of a rich, dark red, or colors for French gray.

French Gray.—White lead with Prussian blue and a little lake.

Lilac.—Same as for French gray, but with less white.

Oak Color.—White lead with yellow ochre and burnt umber.

Mahogany Color.—A little black with purple brown or Venetian red.

In all operations of painting, varnishing, etc., it is of the greatest importance that everything used, whether slab, muller, knife, or brushes, should be kept thoroughly clean.

Varnishes, and Recipes for Making Varnishes.

Varnishes may be bought at the oil and color store at reasonable rates.

A few coats of varnish much improve painted or stained work by imparting to it a smooth and glossy surface. For some work, such as staining, one or two coats will be sufficient, but where it is desirable that the appearance of the article should be as good as it can possibly be made, eight or ten coats will have to be laid on. After the first three or four coats are given and thoroughly dry, take some fine glass-paper and smooth off the brush marks or any gritty particles that may have stuck to the varnish. Then give the work another coat of varnish, which serve in the same manner, and so on for every coat until the last, which should be polished with a flannel rubber dipped in Tripoli powder and water, and finished off with a powder made of suet and flour.

The same precautions must be observed with regard to the brushes used in varnishing as for painting. If put away wet with varnish, they will, after remaining unused for a day or two, be hard and utterly useless. They must, therefore, be well washed immediately after use, and will then be in proper order when again wanted.

GOLD VARNISH.—Thoroughly wash and cleanse from color one part of gum shellac; when dry pulverize it well, reducing it in a mortar to an impalpable powder; mix with it four times its weight of spirits of wine; put the mixture on the fire, and let it remain until the gum is entirely dissolved. Strain the liquor, and keep for use in a well corked bottle.

BLACK VARNISH FOR METAL, ETC.—Fuse and thoroughly incorporate asphaltum, ¾ lb.; shellac, 2 oz.; turpentine, 1 quart. Lay on with a brush.

Polishing, and Recipes for Polish.

Polishing very greatly improves the appearance of articles made of any fancy wood or stained work. There are many different sorts of polish; but those for which recipes are given below will be found to answer the amateur's purpose in every way:

FRENCH POLISH.—Spirits of wine, 1 pint; gum sandarac, ¼ oz.; gum lac, ½ oz.; gum shellac, ½ oz. Expose the whole to a gentle heat, frequently shaking the mixture until the gums are dissolved.

NAPHTHA POLISH.—Wood naphtha, ½ pint; orange shellac, 1 oz.; dragons' blood, ¼ oz.; benzoin, ¼ oz. Prepare in the same way as French polish.

SHELLAC POLISH.—Orange shellac, 1½ oz.; spirits of wine, 1 pint.

The method of applying these polishes is the same for all. A flannel rubber is made and dipped in the polish, and a piece of fine and old linen is then put over the rubber. When the polish oozes through the covering, dip the pad into or slightly moisten it with linseed oil. Another way is to strain the linen over the flannel pad, and then to moisten the linen with a drop or two of the polish and a drop or two of oil. The pad should be held in the right hand, and the linen strained tightly, so that the pad may present a rounded surface. Apply the pad to the surface of the wood in a series of light strokes made by a circular sweep of the hand until the surface is nearly dry, when the pad should be passed up and down in the direction of the grain of the wood. When the rubber is dry some more polish and oil must be put upon it in the same manner as before, and the rubbing continued.

Plenty of what is generally called "elbow-grease" should be given to the work, and not too much polish. Beginners generally lay on a large quantity of polish in clots or thick coats, but when this is done the polish does not look well, neither has it a permanent effect.

No more polish should be laid on than is absolutely necessary. The polish should be well rubbed in and finished off with a little pure naphtha or spirits of wine, whichever happens to be the spirit that is used in the polish. The naphtha or spirits of wine, as the case may be, should *at first* be laid on very gently and with great care, otherwise it will dissolve and remove the polish already laid on; but if proper care is taken its effect will be not only to give the polish a better gloss, but to render it more lasting. Some woods absorb a great deal of polish. In order to prevent this absorption, a coat of gold size, or something of a like nature, is given before the application of the polish. When polishing mahogany or other ornamental or colored wood, should there be any inequalities or faults in any conspicuous part of the object, fill them up with stopping, consisting of plaster of Paris mixed to the consistency of cream with water, tinted with staining or coloring matter corresponding with the color of the article that is to be polished. A mixture of putty, consisting of finely-pounded whiting and painters' drying oil and some coloring matter, will do quite as well. For large holes a composition of beeswax, resin, and shellac is found very useful.

Paper Hanging.

Next to painting, the most important decorative work that can be done within the house is paper-hanging, and a knowledge of the mode of doing this will often prove of great advantage to the amateur artisan, especially if he be a man of slender means.

Besides the American there are two other wallpapers used in paper-hanging, one being of English and the other of French manufacture. The French paper-hangings are perhaps prettier, more artistic, and produce a better effect than American or English-made papers, but they are much more expensive. They may be distinguished from English papers by their narrow width, the English papers being 22 inches wide and the French and American papers only 20 inches. Again, a *piece* of English paper is 12 yards long, and a *piece* of French paper about 9½ yards, the former covering 7 square yards, or 63 feet superficial, and the latter 4¾ square yards, or 41 square feet. Speaking approximately, therefore,

where two pieces of English paper are required, three of French will be wanted at the very least, and in practice this will not be found to be enough.

The American paper is in more common use now, and for quality and artistic effect equals that of foreign make. It comes in *rolls* of *two pieces* each, or 16 yards, a piece being considered 8 yards long. The width is 20 inches over all or 18 inches net. A *piece* then will cover 36 square feet of surface.

On looking at a piece of wall-paper it will be found that the pattern does not come quite out to the edges, so that it must be remembered, in measuring a room for paper, that 18 inches is the absolute net width of the pattern (American); the actual roll of paper itself is wider than this. To measure a room, one method is to measure the circumference, making allowance for doors and windows, and, having ascertained the number of feet, multiply this by the height of the room and divide by the number of square feet in a piece of paper. For the ceiling multiply the length of the room by breadth, which will give area, and divide as before. If a room has offsets these may be measured separately. Thus, taking the room to be 18 ft. by 15 ft., and allowing 11 ft. for doors and windows, and taking the height of the room to be 9 ft., between skirting-board and cornice we have:

18ft. + 18ft. + 15ft. + 15ft. (length of 4 sides of room) — 11ft. (allowance for door and windows) × 9ft. (height between ceiling and skirting) ÷ 36 (No. of square feet in piece of paper).

Or 66 — 11 × 9 ÷ 36, or 55 × 9 ÷ 36 = 14 pieces, or 13 and a fraction, which requires of course 14 full pieces, or 7 rolls, for the sides. The ceiling would be 18 × 15 ÷ 36 = 7½, or 8 pieces.

Small Patterns Most Satisfactory.

The most satisfactory kind of pattern is a small geometrical one, consisting of some simple form, a leaf or flower, conventionally treated. For staircases, passages, etc., papers in imitation of wood or marble are most commonly used, and these can be preserved from much casual injury by varnishing. Marble papers are usually hung in large blocks, the lines of demarcation, horizontal and vertical, being traced, with the aid of a straight edge, in black or brown. For sitting-rooms satin papers, or papers with a glossy surface, are generally used. Papers in which gold is introduced are expensive if they are worth anything at all. In cheap gilt papers, the gold, which is most likely Dutch metal, soon tarnishes and changes as time goes on from a dull copper-red to black. It is good taste to have the ceiling paper light in color and with a subdued figure to harmonize with the sides.

Preliminary Work for Paper Hanging.

If the wall be new it will require sizing before the paper is put on, though this is by no means done as a rule. If the wall has to be re-papered, it must be stripped of the old paper, or *should be* stripped, as new papers are too frequently hung upon old papers; a procedure which is certainly not cleanly, and is in many cases prejudicial to health, because the dampness caused by putting up the new paper often detaches the old paper from the surface of the wall, and oftentimes, if the paste used in hanging the old paper has been bad, a fungus is generated, which spreads over the wall in dark patches of a brown or greenish color.

In re-papering a room after any one stricken down with some infectious disorder, such as scarlet or typhus fever, on no account should the old paper be left on the walls, but it should be carefully stripped and the walls washed, and the ceiling coated with limewash, after the old coating has been taken off with clean water. As soon as this is done, the walls may be sized and the process of re-papering may be proceeded with.

Size is a kind of weak glue, made from the clippings of parchment, glove-leather, fish-skin, and similar substances, by boiling them down in water. When cold it resembles jelly. It is sold by all oil and color dealers.

The wall being sized, it is necessary to determine what tools are absolutely necessary for the paper-hanger's work. These may be summed up as a pair of boards connected by hinges, or, if preferred, simply grooved and tongued together, or even joined by dowels or pins. The amateur

need not provide himself with a pair of boards and trestles merely for the sake of papering a single room; a kitchen table, if long enough, or even a dining table suitably protected, will answer every purpose. The boards are portable, and, therefore, useful to the regular paper-hanger, who may not find any suitable table at the house to which he is going. They are also of greater length than most tables, which is obviously an advantage. Whether the amateur is provided with boards or not, he must of necessity have a pair of good-sized scissors; a pail to hold his paste, whether of wood or iron it matters not, so long as it is clean; and a paste brush, something similar to that used for whitewashing, but smaller.

Paste for Paper Hanging.

Good paste for paper-hanging is made of old flour, mixed to a milk-like consistency with water. When put in the saucepan to boil, a little size or glue may be added, which will increase its tenacity. A little alum may also be added to paste, in order to cause it to spread more freely; this ingredient has the property of keeping paste sweet and wholesome, and it is generally used in the thicker kinds of paste, such as shoemakers' paste, partly for this purpose. The paste when boiled should be of the thickness of ordinary gruel, and must be laid on the paper smoothly and equally with backward and forward strokes of the brush. Care should be taken not to load the brush with too much paste at one time, lest the paper should be rendered too damp. It will sometimes happen that through an over-abundance of paste a little is pressed out at the edges when the cloth is used to dab the paper against the wall. Any paste that makes its appearance should be removed by means of a sponge dipped in clean water, but the amateur must be careful to avoid smearing the colors of the paper. The colors will often be started in a slight degree by the influence of the damp paste, and if the surface be smeared the only thing that can be done is to paste a piece of fresh paper over the smear, which, if left as it is, will prove a continual eyesore.

Where to Begin to Hang Paper.

Where to make a commencement in hanging a room with paper will be a bit of a puzzle to the amateur paper-hanger. The rule is that the edges of the paper when hung shall be towards the window; that is to say, that if there be a window in the room the paper must be hung from either side of the window round the room, the junction being finally effected in some corner of the room or some recess, where the mismatching of the pattern would not be so apparent.

When it has been ascertained by actual measurement how much paper is required for hanging on each side of the commencement, wherever it may be, whether on each side of the window or from the middle line over a mantel-shelf, proceed to cut the paper. The usual way is to unroll the paper for a yard or two, cut the edge on one side, roll up the paper just cut, lightly and loosely, and continue unrolling, cutting, and rolling up by a yard or two at a time till the other end of the roll is reached. Some will then cut the other edge, proceeding in the same way until the paper is rolled as it was before the cutting commenced, having the topmost piece at the outer end. It is important to remember that whichever side is cut close to the pattern, the opposite side must not be cut closer than from ¼ in. to ½ in. of the pattern. The edge that is not cut close need not, in point of fact, be cut at all; the chief object in cutting it is to leave as small an extent of overlapping as possible where the strips are joined together. The best paper-hangers, who can set the paper to a line, trim close on both sides and do not overlap, but set to the edge.

Cutting Paper into Lengths.

When the edges are cut the next step is to cut the paper into lengths suitable to the height of the room, and this, whether the overplus at top and bottom be much or little, must be done in such a manner that when the second strip is pasted up by the side of the first the pattern will join neatly and exactly, leaving as few traces as possible, if it leave any, of the line of junction. The "match" is shown by certain marks

on the edge of the paper, and if it be found that a considerable length of paper be left either at top or bottom, or at both, it will be better and more convenient for the amateur in carrying out the operation of hanging each slip to cut off the surplus paper, leaving no more than an inch or two at top and bottom beyond the length between skirting and cornice. Cut the paper straight across, which can be easily done by aid of the pattern, and cut as many lengths as will suffice for one or two sides of the room to begin with. Lay the lengths thus cut face downwards on the pasting-board, letting the edge of each strip as it is laid down project a little beyond the edge of that which is immediately below it, in which the uppermost strip is the last strip laid down. This prevents the paste from getting under the edges of the piece below when the piece above is being pasted.

Attaching to the Wall.

As many strips as may be required having been laid one on top of another on the board, the first strip may be pasted, but a little judgment must be used as to the time that may be allowed to elapse before the paper is attached to the wall. If the paper be cheap, and therefore thin and unsubstantial, it must be hung up as quickly as possible after the paste is put on; but if it be a stout, good paper, some two or three minutes may elapse between pasting and hanging; and a thick paper may be left even twice as long, to allow the damp to penetrate the paper and render it more easy of manipulation and less liable to be crushed or broken. For easier manipulation it is better to loop up the lower end of the paper, the paste causing the paper to adhere slightly where one part comes in contact with another. Then fold back the top, and putting the hands, which should be perfectly clean and free from paste, under this fold, attach the paper to the wall, bringing the top upwards with the hands to meet the cornice. Care should be taken beforehand to make a guide line on the wall, or to see that the woodwork round the window is perfectly upright, and this will assist the amateur in fixing the first strip truly perpendicular. After attaching it lightly to the wall, the plumb-line may be applied to see that all is true and vertical, and if all is right release the fold, and, after letting the paper hang straight down, lift it away from the wall, except for about six or eight inches below the cornice, and then let the strip fall, when it will gently float down into its place.

The next step is to press the paper against the surface of the wall in every part, and for this purpose the amateur must be provided with some clean soft cloths. First of all, the paper must be pressed down the middle from top to bottom with firm but gentle pressure, avoiding all rubbing, which may have the effect of starting the color and smearing and spoiling the paper. Then press from the centre outwards on both sides in a downward direction. The paper in some cases will lay smooth and flat against the wall, but if the paper be cheap and thin there will in all probability be many wrinkles all over the surface. Do not attempt to press these flat. The paper has stretched under the influence of the moisture of the paste, and as it dries it will contract again and lay as flat as possible all over the wall to which it is attached. Lastly, draw the scissors over the paper just below the cornice and just above the skirting-board, making a crease. Then pull the paper gently from the wall as far as may be necessary, cutting off the edges along the mark or crease made by the scissors, and restore the ends to their places, dabbing them lightly as before with the cloth, which should be so doubled up as to form a large, loose pad.

The second strip may now be put up in the same way. Here, however, the chief anxiety will be to match the pattern neatly, for if the first strip be put up perpendicularly the other strips will be perpendicular as a matter of course. Nevertheless it will be as well for the amateur to test his work occasionally by the plumb-line, to make sure that it is not getting out of the perpendicular.

It may be that the amateur will not be successful in his first effort, and then all that can be done is to sacrifice the strip of paper, pull it down, and try again. As in everything else, practice is necessary to enable a man to do this work well and quickly.

It will be advisable, then, for any beginner to try his 'prentice hand in an attic or some small room of no great consequence, in order to give him some idea of the way in which paper must be handled and attached to the wall. He will soon gain confidence in himself, and find no great difficulty in papering other rooms where it will be absolutely necessary that the work be neatly and accurately done.

Borders should be neat in design, and match the paper in this respect and in color, or if the colors do not harmonize they should be in agreeable contrast. A cable pattern generally looks well, or the Grecian rectangular pattern, known as the Greek key pattern. The representation of a simple molding is often very effective, and when the paper is plain in character and geometrical in pattern a floral border is admissible. It must be remembered, however, that a border, however good it may be, tends to detract from the apparent height of the room, and therefore is not so well calculated for a low room as for a high room, to which the horizontal lines of the border impart an appearance of breadth and space.

BELLS AND TELEPHONES

The electric bell constitutes one of the most simple pieces of apparatus for signaling by electricity, and although more than half a century has elapsed since it was first introduced, no better method of signaling or giving a *call* has yet been invented for land lines. It is always used for attracting attention in telephonic communication and very often also in telegraphy.

To Wire for and to Connect Electric Bells.

It is easy to understand that an electric bell equipment usually consists of one electric bell, one cell of battery, one push-button, and wire enough to connect the outfit for a reasonable distance.

The push-button is, of course, set at the place from which the signal is to be given, and, when connected, the pressing of the button should ring the bell. The bell should continue ringing as long as the button is pressed. The bell should be placed where the persons who are expected to answer it [when it rings] are likely to be, so it can be heard by them. The battery, the motive power, is placed at some convenient place, the closer the battery is placed to the push-button, the better for some work.

The wire is used to make the connection to the bell, battery, and push-button. The proper way to connect an electric bell outfit is to run one wire from the push-button to the battery, one wire from the push-button to the bell, and one wire from the bell to the battery. This gives two wire ends at each place, namely, bell, battery, and push-button. The bell, battery, and push-button each have two places where the wires are connected. To all places to which wires are connected the insulation covering of the wires must be removed, and the wire made clean and bright. Then connect it with the connecting places of the push-button, bell, and battery. This way of connecting an electric bell outfit is called a metallic circuit.

A Grounded Circuit.

On long distances wire can be saved by using a grounded circuit, which is done as follows: Drive a piece of iron into the earth, from four to five feet down, connect a wire to the iron driven into the ground by wrapping the bare wire tightly around the iron. This ground wire is then run to the battery and connected to the zinc side. A second wire is run from the carbon side of the battery to one side of the push-button; a second wire runs from the push-button to wherever the bell is placed; a wire is run from the bell to a second ground iron, and attached or connected to the ground iron, the same as the first ground connection was made. Where long distances are to be connected, namely, from house to stable, factory or any other building, this way of doing electric bell work is frequently done. All wires that are outside of buildings should be fastened on to porcelain or glass insulators, and never be nailed against brick or stone walls, or any frame buildings; always use insulators, and have wires clear of all places.

It is recommended for electric bell work that no lighter wire than what is known in the trade as No. 16 be used, and that the wire have a good insulation or covering.

Making Connections.

In all ordinary electric bell work, if reasonable care is taken, no connections or splices are necessary in the wire. Should it be necessary to make a connection of two ends of wire, make a good one and solder it; do not neglect doing this (soldering connections) in case you cannot solder the connections, wrap them with tin foil, or some tissue paper, and on top of this use some insulating tape, making a good covering over the wire again. Do not, however, use insulating tape right on a wire connection, as the place gets corroded, and is an injury to good work.

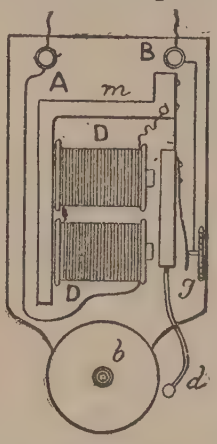
When it is desired electric bell work can be so arranged so one, two or more bells can be rung from one or as many more places as desired. This is all simple work, and can be easily understood by making electric bell circuit diagrams, to show similar points on same line.

The wire for push-buttons must be always connected in multiple, with the wire attached to the first push-button. This is easily done by making half connections. The push-button end of wires must always be so connected in open circuit bell work.

The bells when so connected that two or more ring simultaneously, should be also connected in multiple.

The Working of the Bell.

The electric bell consists essentially of an electro-magnet and a vibrating armature piece which oscillates in front of it. If a current enters the terminal A it is conducted through the coils D D of the electro-magnet, which has iron cores, and passes out through the metal of the armature, the contact screw, *g*, and the terminal B. Such a current will, of course, cause the electro-magnet to draw the armature down on to its terminals, the armature itself being attached by a flexible steel spring to the framework, so as to make this movement possible. In the act, however, of drawing down the armature, the contact of the screw *g*, and a prolongation of the armature spring, is broken, and as this contact forms part of the electric circuit, the current ceases to magnetize the electro-magnet; the armature is, therefore, no longer attracted and springs back by virtue of the steel spring, and contact between it and the screw, *g*, is restored, which causes the same operation to be repeated. This motion takes place very rapidly to and fro, and is communicated to a light hammer, *d*, which strikes the bell, *b*, and produces a continuous and loud ringing sound. The whole apparatus forms a simple method of drawing attention from a distance, and can always be relied upon to work properly.



—Electric Bell.

The only drawback to the bell is that if the screw, *g*, is set so as to make it as sensitive as possible, a vibration of the support to which the whole apparatus is fixed, due to a passing train or vehicle, might be sufficient to cause the hammer to strike the gong. In railway signal-boxes, where electric bells are much used, it is absolutely necessary that this should not happen, as it might lead to a serious catastrophe. The bells in this case are, therefore, so arranged that on closing the electric circuit the bell-hammer only strikes the gong once, and only when the circuit is broken again outside the bell does it spring back so as to be ready for a second signal.

Alternating Currents.

Such vibrating electric bells will work with both direct and alternating currents, but not nearly so well with the latter. As, however, it is very often found desirable to use alternating currents, a special *polarized* bell has been devised for use with them, in which the armature, the amplitude of whose movement is regulated by screws, vibrates in a vertical plane between two poles of an electro-magnet, bent round at right angles.

No make-and-break mechanism is necessary as in ordinary bells, because the alternating current is continuously reversing the sign of the poles of the electro-magnet, causing the armature and bell-hammer to vibrate, by alternate attraction and repulsion. It is usual in these bells to intensify the sound by using two domes, making use of the return stroke of the hammer.

The current is produced by a small magneto dynamo worked by hand. This method of dispensing with primary batteries is due to Siemens, and has the advantage that a high E.M.F. (Electric Motive Force) can be generated at no expense, the power being supplied by the operator himself.

Cautions to be Observed.

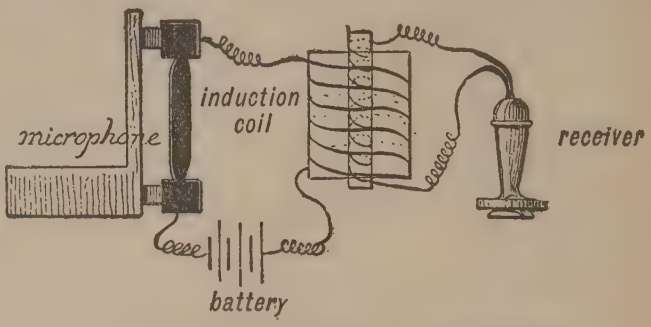
To sum up, then, let us say that in putting up electric bells, telephones, etc., there are several points which must be carefully attended to, if satisfactory working is desired; the conducting wires must be as well insulated as possible. Mere touching contacts should be avoided unless absolutely necessary. If possible contacts or joints should be soldered so as to make a good metallic connection. If any connections are made by terminals or binding screws, they must be carefully cleaned and seen to from time to time; this remark applies especially to the battery terminals, which are more likely to become corroded by the electrolyte. The general arrangement of the wires should be first mapped out on paper, and this plan carefully adhered to in putting them up, otherwise confusion and trouble will arise.

Putting up Telephones.

There are two very distinct methods of *transmitting* the voice possible in telephonic systems: electro-magnetic *transmitters* for use without batteries, and transmitters on the microphone principle requiring some external source of current. The instruments for receiving the voice are called *receivers*, and are always based on the principle of the electro-magnetic transmitter.

The first practical telephone was invented by Graham Bell, and patented by him in 1877; it was also invented independently about the same time by Elisha Gray. The principle of this telephone is based on the laws of electro-magnetic induction.

A complete apparatus for telephonic communication consists: at the transmitting station, of a microphone, battery, and induction coil, and a bell-push which rings a bell at the receiving station to draw attention; at the receiving end, of Bell telephone receiver and the call-bell.



Apparatus for the Transmission of Sound by Electricity.

Line Wires.

In towns, each person having a telephone is connected to an exchange, and by which he can be connected at will to any other person also connected to the exchange.

The line wires, connecting the transmitting and receiving stations, consist of two copper conductors of high conductivity and great tensile strength. It is found that alloys of copper and silicon, or copper and aluminium, are best for this purpose. The wires have a resistance of about 80 ohms per mile, and their breaking tension is about 150 lbs. With wire weighing about 19 lbs. per mile, spans of 100 to 150 yards are possible. The wires, if overhead, are supported on porcelain insulators, which are attached at a convenient height from the ground to posts or houses; in the country trees often come in handy for the purpose. In cities the best method is to lay them underground, where they are safe from the effects of fire or weather; this, however, is rarely done, as overhead wires are so very much cheaper.

If a telephone line does not run anywhere near any other telephone, telegraph, or electric circuit, the return wire may be replaced with economy by the earth. In this case very careful connection must be made with the earth at each end. A good plan is to solder the connecting wire to a water pipe, but if this is not available, it must be connected to a large metallic plate of copper buried deeply in damp earth, which it is as well to water from time to time. It is best to avoid this earth return for telephones if possible, as it is very seldom satisfactory.

In fixing up the telephone apparatus it should never be attached to thin partitions which are capable of vibration, but should be screwed to a solid wall, and even then it is as well to place a couple of layers of felt between the instrument and the wall.

Number of Bells Required.

A couple of cells of almost any make such as Daniells or Le Clanche are quite enough for working a short telephone line, and for longer distances three or four at the outside are sufficient, for, an excess of electromotor force produces a crackling sound in the receivers, which may be loud enough to seriously inconvenience conversation. For electric bells the number of cells required depends upon the length of the line and the resistance of the bells used, and the right number is usually found by experiment.

If a telephonic line is to be established near a telegraph line, it becomes necessary to use a metallic wire for the return, because the effects of induction, due to the making and breaking of the telegraph current, when an earth return is used by both circuits, becomes sometimes great enough to spoil all telephonic communication.

As a matter of fact it is very seldom that an earth return can be used for telephone lines, for the circuit is then always liable to external disturbances, such as leaks from electric light and power circuits, telegraph currents, earth currents, etc. Even with twin wires the greatest attention must be paid to good insulation of the line, otherwise the above-mentioned disturbances may make their influence felt. When all such stray currents have been eliminated from the system, the length of a telephone line may be greatly increased; conversation has been carried on quite distinctly at distances of 800 and 900 miles.

Operating a Telephone.

The manipulation of a telephone instrument is quite simple. In nearly every type of instrument the receivers are hung on a hook which is pivoted on an axis. This movable hook has a spring attached to it so that, when the receiver is hung on it, the hook falls and distends the spring. If the receiver is unhooked the spring is released and the hook is drawn up. It is really a switch, and the up-and-down movement causes the proper connections of line and bell, and line and telephone to be made. To enter into communication with another person through the exchange, the handle of the magneto-generator is turned, or a button is pressed. The exchange answer the signal by ringing the subscriber's bell. The receiver is then unhooked and placed to the ear, and the mouth is placed opposite the microphone. The attendant at the exchange asks what number is required, which being given the proper connection is made there, and the two persons are now in direct communication. When the conversation is finished, the bell is again rung to signify the fact, and the attendant at the exchange disconnects them.

Batteries.

Batteries are connected by attaching the carbon side of one cell to the zinc side of the next; follow this for any number and there will always remain one carbon pole and one zinc pole to which line wires may be connected. Batteries should be examined occasionally and cleaned. Do not use more salamoniac than will readily dissolve and have a small amount in bottom of cell. Place the batteries so they may not be exposed to draughts or heat. Use soft rainwater in the solution. Six ounces of salamoniac to a jar is enough. When the batteries appear to be doing too much work or become weak, examine all connections; look for leaks where wires cross or touch. Test each battery separately by connecting it with the two poles of a bell used for that purpose.

The practical mechanic—the amateur workman—the busy man of affairs—the housekeeper—the farmer, have occasions for useful information about the common materials used in building and repairing and for the tables and measurements used in the different trades and business pursuits, which are seldom found outside of books treating of special trades. These facts and figures also enable one to deal intelligently with the mechanic and tradesman. They are *time-savers*, and hence are *money-makers*. Such information is only secured after long and diligent search and comparison of authorities. We give many of the important ones.

FACTS AND FIGURES FOR EVERY DAY USE

Shingles.

The best shingles are of white cedar. When of good quality, they will last 40 to 50 years in our Northern States. Cypress and white pine are much used for shingles, but will not last half as long as white cedar.

Shingles are packed 250 to the bundle, or 4 bundles to 1,000.

1 Bundle 16-inch shingles will cover 30 square feet.

1 Bundle 18-inch shingles will cover 33 square feet.

When laid 5½ inches to the weather, 5 lbs. 4° or 3¾ lbs. 3° nails will lay 1,000 shingles.

Clap-Boards.

1 Bundle laid 3½ inches to the weather will cover 26 square feet.

Painting.

For outside wood-work, paint made from white lead ground in linseed oil is most used. If the oil is *raw*, or unboiled, *dryer* is added; if *boiled*, no dryer is necessary. Not less than four coats should be applied—five are better.

Paint, ready mixed, put up in cans or kegs, may be procured from manufacturers or dealers. These paints have to be thinned by adding 1 pint of oil to about 2½ lbs. of paint. When thinned, 1 lb. will cover about 2 square yards of first-coat, 3 yards of second, and 4 yards of each subsequent coat; or 1⅜ lbs. to the square yard will be required for 4 coats, and 1⅝ lbs. for 5 coats.

For inside work, either white lead or oxide of zinc is used, and for good work 4 coats are necessary.

For iron exposed to the weather, metallic paints, such as yellow and red iron ochres or brown hematite ore, finely pulverized and mixed with oil or dryer, are best.

For iron subject to the action of water, red lead is best.

Plastered walls should stand a year before painting.

Painting is measured by the square yard, girding every part of the work that is covered by paint and allowing an addition to the actual surface for the difficulty of covering deep quirk of moldings and for "cutting in" as in sash and shelving, or where there is a change of color, on same work.

Painter's Putty.

Spanish whiting, pulverized, 80.6 Boiled oil, 20.4	Made into a stiff paste. If not intended for immediate use, raw oil should be used.

One pound of putty for stopping every 20 yards.

Glazier's Putty.

Whiting, 70 lbs.; boiled oil, 30 lbs.; water, 2 galls. Mix. If too thin, add more whiting; if too thick, add more oil.

To Soften Putty.

To remove old putty from broken windows, dip a small brush in nitro-muriatic acid or caustic soda (concentrated lye), and with it anoint or paint over the dry putty that adheres to the broken glass and frames of your windows; after an hour's interval the putty will have become so soft as to be easily removable.

White and Other Washes.

For outside wood-work. In a tight bushel, slake half a bushel of fresh lime by pouring over it boiling water sufficient to cover it 4 or 5 inches deep, stir until slaked: add 2 lbs. of sulphate of zinc dissolved in water, add water enough to bring all to the consistency of thick whitewash.

For inside work. Add 2 quarts of thin size to a pailful of wash just before using. The common practice of mixing salt with whitewash should not be permitted.

For brick or stone-work. Slake ½ bushel of lime, as before, in a barrel; then fill the barrel ⅔ full of water and add a bushel of hydraulic cement; add 3 lbs. sulphate of zinc dissolved in water. These washes may be colored by adding powdered ochre, umber, etc.

Stone-Work.

A perch of stone work is 1 rod long, 1½ feet thick and 1 foot high, and contains 24¾ cubic feet.

A cord of stone, like a cord of wood, contains 128 cubic feet, and will make a 100 cubic feet of wall. Three bushels of lime and a cubic yard of sand are usually estimated for a cord of stone.

Stone walls are measured by the perch (24¾ cubic feet). Openings less than 3 feet wide are counted solid; over 3 feet deducted, but 18 inches are added to the running measure for each jamb built. Arches are counted solid from their spring. Corners of buildings are measured twice. Pillars less than 3 feet are counted on 3 sides as lineal, multiplied by fourth side and depth.

It is customary to measure all foundation and dimension stone by the cubic foot. Water tables and base courses by lineal feet. All sills and lintels or ashlar, by superficial feet, and no wall less than 18 inches thick.

The greatest safe load per super. foot on

Granite Piers	40 tons.
Lime stone Piers	25 "
Sand stone Piers	15 "
Brickwork in Cement	3 "
Rubble Masonry	2 "
Lime Concrete Foundations	2½"

The height of brick or stone piers should not exceed 12 times their least thickness at base.

Concrete Walls.

Concrete walls for houses are built of 1 of cement to 6 or 7 of broken stone, shingle, gravel, or slag. The substance mixed with the cement must be free from loam, fine sand, clay, or dirt of any kind.

To prevent the cement from adhering to the planks of the mould, apply freely to them, with a brush, soap boiled to the constancy of paint.

Plastering.

Estimate of material for 100 square yards.

Materials	Two coats slipped coat finish	Three coats with hard finish
Quicklime	3½ casks	4 casks
" for fine stuff		⅔ "
Plaster of Paris		½ "
Laths	2,000	2,000
Hair	3 bushels	4 bushels
Common Sand	6 loads	7 loads
White Sand		2½ bushels
Nails	13 lbs.	13 lbs.
Mason's labor	3½ days	4 days
Laborer	2 "	3 "

Plastering laths are usually of white or yellow pine, 1½ inches wide, ¼ inch thick, and 3 or 4 feet long. They are nailed up horizontally, about ½ inch apart. The upright stud of partitions are spaced at such distances apart, (usually about 15 inches centre to centre), that the ends of the laths may be nailed to them. Laths are sold in bundles of 1,000 each. A square foot of surface requires 1½ four-feet laths, or 1,000 such laths will cover 666 square feet. A carpenter can nail up the laths for from 40 to 60 square yards of plastering in a day of ten hours, depending on the number of angles in the room, etc.

Plastering is always measured by the square yard for plain work, by the superficial foot for cornices of plain members, and by lineal foot for enriched or carved mouldings in cornices.

Brick-Work.

Brick-work is generally measured by 1,000 bricks laid in the wall. In consequence of variations in size of bricks, no rule for volume of laid brick can be exact. The following scale is given as a fair average for general use.

7	Bricks	to a	super.	foot	4" Wall	= 40 lbs.
14	"	"	"		9" "	= 94 "
21	"	"	"		13" "	=121 "
28	"	"	"		18" "	=168 "
35	"	"	"		22" "	=210 "

Corners are not measured twice as in stone-work. Openings over 2 feet square are deducted. Arches are counted from the spring. Fancy work counted 1½ bricks for 1. Pillars are measured on their face only.

A cubic yard of mortar requires 1 cubic yard of sand and 9 bushels of lime, and will fill 30 hods.

One thousand bricks, closely stacked, occupy about 56 cubic feet.

One thousand old bricks, cleaned and loosely stacked, occupy about 72 cubic feet.

One superficial foot of gauged arches requires 10 bricks.

Stock bricks commonly measure 8¾ inches by 4¼ inches by 2¾ inches, and weigh from 5 to 6 lbs. each.

Paving-bricks should measure 9 inches by 4½ inches by 1¾ inches, and weigh about 4½ lbs. each.

One yard of paving requires 36 stock bricks, of above dimensions, laid flat, or 52 on edge; and 35 paving bricks laid flat, or 82 on edge.

Slating.

A square of slate or slating is 100 superficial feet.

In measuring, the width of the eaves is allowed at the widest part. Hips, valleys, and cutting are to be measured lineal, and 6 inches width extra is allowed.

The thickness of slates ranges from 3–16 to 5–16 of a inch, and their weight varies from 2.6 to 4.5 lbs. per square foot.

The *lap* of slates varies from 2 to 4 inches. The standard is assumed to be 3 inches.

To compute the number of slates of a given size required per squares.

Subtract 3 inches from the length of the slate, multiply the remainder by the width and divide by 2. Divide 14.400 by the number so found, and the result will be the number of slates required.

The *pitch* of a slate roof should not be less than 1 in. height to 4 in. length.

Dimensions of slates and numbers required to a square. 12x6 requires 533 to the square; 14x9 requires 291; 18x9 requires 213; 24x13 requires 105.

Rules for Obtaining Approximate Weight of Iron.

For Round Bars.

Rule: Multiply the square of the diameter in inches by the length in feet, and that product by 2.6. The product will be the weight in pounds, nearly.

For Square and Flat Bars.

Rule: Multiply the area of the end of the bar in inches by the length in feet, and that by 3.32. The product will be the weight in pounds, nearly.

Wrought Iron, usually assumed:

A cubic foot	=480 lbs.
A square foot, 1 inch thick	= 40 "
A bar 1 in. square, 1 foot long	= 3½"
A " " " 1 yard long	= 10 "

To find the weight of Cast-Iron Balls when the diameter is given.

Rule: Multiply the cube of the diameter by .1377.

To find the diameter of Cast-Iron Balls when the weight is given.

Rule: Multiply the cube root of the weight by 1.936.

To find the weight of a Spherical Shell.

From the weight of a ball of the outer diameter subtract the weight of the inner diameters.

To Test Quality of Iron.

If fracture gives long silky fibres of leaden-gray hue, fibres cohering and twisting together before breaking, may be considered *a tough, soft iron*. A medium even grain mixed with fibres, a good sign. A short, blackish fibre indicates badly-refined iron. A very fine grain denotes a *hard, steely iron*, apt to be cold, short, hard to work with the file. Coarse grain with brilliant crystallized fracture, yellow or brown spots, denotes a *brittle iron*, cold, short, working easily when heated; welds easily. Cracks on the edge of bars, sign of hot, short iron. Good iron is readily heated, soft under the hammer, and throws out but few sparks.

All iron contains more or less carbon—the hardest the most.

The breaking strain on various metals is shown in the following table, the size of the rod tested being in each case one inch square, and the number of pounds the actual breaking strain:

	Pounds.
Hard steel,	150,000
Soft steel,	120,000
Best Swedish iron,	84,000
Ordinary bar iron,	70,000
Silver,	41,000
Copper,	35,000
Gold,	22,000
Tin,	5,500
Zinc,	2,600
Lead,	860

Average Weight of Animals.

Cart-horse, 14 cwt.	Riding-horse, 11 cwt.
Ox, 7 to 8 "	Pig, 1 to 1½ "
Cow, 6½ to 8 "	Sheep, 1 "

Average weight of a man, 140 lbs.

A dense crowd of people, 85 lbs. per square foot.

Average Number of Cubic Feet Per Ton of Various Substances for Estimating Work or Stowage.

Iron	4.7
Lead	3.2
Brick	22
Clay	22
Sand	24
Earth, loose	28
Granite	16
Oak	39.5
Ash	45
Cedar	72
Mahogany, sp.	45
Deal	50
Pine, red	55
" yellow	77
Water, fresh	36
" salt	35
Coke	90
Coal (stowed)	48
Wood (equivalent) requires	288

WORKSHOP RECIPES

A Home-Made Lubricator.—Tallow and plumbago thoroughly mixed make the best lubricator for surfaces when one is wood or when both are wood. Oil is not so good as tallow to mix with plumbago for the lubrication of wooden surfaces, because oil penetrates and saturates the wood to a greater degree than tallow, causing it to swell more.

To Protect Metal Surfaces From Rusting.—Melt 1 oz. of resin in a gill of linseed oil, and while hot mix with it two quarts of kerosene oil. This can be kept ready to apply at any time with a brush or rag to any tools or implements required to lay by for a time, preventing any rust, and saving much vexation when the tool is to be used again.

Glue to Resist Moisture.—1 lb. of glue melted in 2 quarts skim-milk.

Marine Glue.—1 part of India-rubber, 12 parts of mineral naphtha or coal-tar. Heat gently, mix, and add 20 parts of powdered shellac. Pour out on a slab to cool. When used, to be heated to about 250°.

Glue Cement to Resist Moisture.—1 part glue, 1 part black rosin, ¼ part red ochre. Mixed with least possible quantity of water. Or 4 parts of glue, or 1 part oxide of iron, 1 part of boiled oil (by weight).

To Remove Rust From Steel.—Steel which has been rusted can be cleaned by brushing with a paste compound of ½ oz. cyanide potassium, ½ oz. castile soap, 1 oz. whiting, and water sufficient to form a paste. The steel should be washed with a solution of ½ oz. cyanide potassium in 2 oz. water.

To Preserve Steel From Rust.—1 part caoutchouc, 16 parts turpentine. Dissolve with a gentle heat, then add 8 parts boiled oil. Mix by bringing them to the heat of boiling water; apply to the steel with a brush, in the way of varnish. It may be removed with turpentine.

To Clean Brass.—1 part Roche alum and 16 parts water. Mix. The articles to be cleaned must be made warm, then rubbed with the above mixture, and finished with fine tripoli.

Blue Print Solution for Photographer.—1 pint citrate of iron ammonia, 2 pints red prussiate of potash, 1 pint gum arabic, 3 pints water.

Do.—1¼ oz. red prussiate of potash in 11 oz. water, 1⅞ oz. citrate of ammonia in 5 oz. water. Mix together and keep in dark place. Corrections can be made with a pen dipped in a solution of caustic soda. Also by bi-carbonate of soda. Also by a solution of lime.

Tinning Acid for Zinc or Brass.—Zinc, 3 oz.; muriatic acid, 1 pt. Dissolve, and add 1 pt. water and 1 oz. sal-ammoniac.

To Solder Brass Easily.—Cut out a piece of tinfoil the size of the surface to be soldered. Then apply to the surface a solution of sal-ammoniac for a flux. Place the tinfoil between the pieces, and apply a hot soldering-iron until the tinfoil is melted.

To Solder Without Heat.—Steel filings, 2 oz.; brass filings, 2 oz.; fluoric acid, 1¼ oz. Dissolve the fillings in the acid, and apply to the parts to be soldered, having first thoroughly cleaned the parts to be connected. Keep the fluoric acid in earthen or lead vessels only.

To Tin Brass and Copper.—Make a mixture of 3 lbs. cream of tartar, 4 lbs. tin shavings, and 2 gallons water, and boil. After the mixture has boiled sufficiently, put in the articles to be tinned, and continue the boiling. The tin will be precipitated on the articles.

To Use in Case of Burns.—A free application of soft soap to a fresh burn almost instantly removes the fire from the flesh. If the injury is very severe, as soon as the pain ceases apply linseed oil, and then dust over with fine flour. When this covering dries hard, repeat the oil and flour dressing until a good coating is obtained. When the latter dries, allow it to stand until it cracks and falls off, as it will in a day or two, and a new skin will be found to have formed where the skin was burned.

How to Mix Inks or Paints for Tints.—A larger quantity of the first-named color must always be used. Dark green and purple make bottle green. White and medium yellow make buff tint. Red, black, and blue make dark brown. Bronze blue, lemon yellow, and black make dark green. White, medium yellow, and black make drab tint. White, lake, and lemon yellow make flesh tint. Lemon yellow and bronze blue make grass green. White and black make gray tint. White and purple make lavender tint. Red, black, and medium yellow make maroon. Lake and purple make magenta. Medium yellow and purple make olive green. Medium yellow and red make orange. White, ultramarine blue, and black make pearl tint. White and lake make pink. Ultramarine blue and lake make purple. Orange, lake, and purple make russet. Medium yellow, red, and

white make sienna. White and ultramarine blue make sky blue. Ultramarine blue, black, and white make slate. Vermillion and black make Turkey red. White, yellow, red, and black make umber.

Time-Savers.—We give the following figures as worth remembering. They will save calculation and give approximately accurate results with least amount of labor:

Four loads, (cubic yds.) of stone, three bushels of lime and a cubic yard of sand, will lay one hundred cubic feet of wall.

Five courses of brick will lay a foot in height on a chimney.

Nine bricks in a course will make a flue eight inches wide and twenty inches long, and eight bricks in a course will make a flue eight inches wide and sixteen inches long.

Eight bushels of good lime, sixteen bushels of sand and one bushel of hair, will make enough mortar to plaster one hundred square yards.

One-fifth more siding and flooring is needed than the number of square feet of surface to be covered, because of the lap in the siding and matching of the floor.

One thousand laths will cover seventy yards of surface, and eleven pounds of lath nails will nail them on.

One thousand shingles laid four inches to the weather, will cover one hundred square feet of surface, and five pounds of shingle nails will fasten them on.

A Polish for Wood.—The wooden parts of tools, such as the stocks of planes and handles of chisels, are often made to have a nice appearance by French polishing; but this adds nothing to their durability. A much better plan is to let them soak in linseed oil for a week, and rub with a new cloth for a few minutes every day for a week or two. This produces a beautiful surface, and has a solidifying effect on the wood.

To Calculate the Number of Shingles for a Roof.—To calculate number of shingles for a roof, ascertain number of square feet, and multiply by four, if two inches to weather, 8 for 4½ inches; and 7 1-5 if 5 inches are exposed. The length of a rafter of one-third pitch is equal to three-fifths of width of building adding projection.

A Chimney that Will Draw.—To build a chimney that will draw forever, and not fill up with soot, you must build it large enough, sixteen inches square; use good brick, and clay instead of lime up to the comb; plaster it inside with clay mixed with salt; for chimney tops use the very best of brick, wet them and lay them in cement mortar. The chimney should not be built tight to beams and rafters; there is where the cracks in your chimney comes, and where most of the fires originate, as the chimney sometimes get red hot. A chimney built from the cellar up is better and less dangerous than one hung on the wall.

Keeping Tools.—Keep your tools handy and in good condition. This applies everywhere and in every place, from the smallest shop to the greatest mechanical establishment in the world. Every tool should have its exact place, and should always be kept there when not in use.

Keeping tools in good order, and ready to use, is as necessary as keeping them in the proper place. To take up a dull saw, or a dull chisel, and try to do any kind of work with it, is worse than pulling a boat with a broom, and it all comes from just the same source as throwing down tools carelessly—habit, nothing more or less. To say you have no time to sharpen is worse than outright lying, for, if you have time to use a dull tool, you have time to put it in good order.

Three Thermometer Scales.—There are three standard thermometers in use, each a recognized standard in one or another part of the world. The scale of Reaumur (R.) prevails in Germany. As is well known, he divides the space between the freezing and boiling points into 80°. France uses that of Celsius (C.), who graduated his scale on the decimal system. The most peculiar scale of all however, is that of Fahrenheit (F.), a renowned German physicist, who in 1714 or 1715 composed his scale, having ascertained that water can be cooled under the freezing point without congealing. He did not take the congealing point of water, which is uncertain, but composed a mixture of equal parts of snow and *Sal Ammoniac*, about—14° R. This scale is preferable to both those of Reaumur and Celsius, or, as it is called, Centigrade, because: 1. The regular temperatures of the moderate zone move within its two zeros, and can therefore be written without + or —. 2. The scale is divided so finely that it is not necessary to use fractions, when careful observations are to be made. These advantages, although drawn into question by some, have been considered so weighty, that both Great Britain and America have retained the scales, while the nations of the Continent use the other two. The conversion of any one of these scales into another is very simple. 1. To change a temperature given by Fahrenheit's scale into the same given by the Centigrade scale, subtract 32° from Fahrenheit's degrees and multiply the remainder by 5-9. The product will be the temperature in Centigrade degrees. To change from Fahrenheit's to Reaumur's scale, subtract 32° from Fahrenheit's degrees, and multiply the remainder by 4-9. The product will be the temperature in Reaumur's degrees. 3. To change a temperature given by the Centigrade scale into the same given by Fahrenheit, multiply the Centigrade degrees by 9-5, and add 32° to the product. The sum will be the temperature by Fahrenheit's scale. 4. To change from Reaumur's to Fahrenheit's scale, multiply the degrees on Reaumur's scale by 9-4, and add 32° to the product. The sum will be the temperature by Fahrenheit's scale.

Weighing Liquids.—One gallon of pure water weighs nearly 8½ lbs. avoirdupois. "A pint is a pound" is an old saying, and very nearly true. The gallon containing 231 cubic inches, is the standard unit of wine measure. The British gallon, called the Imperial gallon, contains 277.274 cubic inches.

ENGINES AND BOILERS

Steam Boilers.—For all boilers three different parts, viz., fire-surface, water-space and steam-room, must be considered. Each part or division has a distinct and separate duty to perform. The fire-surface includes the furnace and combustion chamber, flues and tubes; the water-space is that part occupied by the water; and the steam-room is the reservoir which holds and supplies the steam necessary to run the engine.

For convenience, we may state that all steam-boilers are either internally or externally fired. When the fuel is burned in an iron furnace surrounded with a water-jacket or water-log, as in the case of the locomotive, marine and portable boilers, they are internally fired. Cylinder-flue, double-deck, tubulous and sectional boilers are said to be externally fired, because the fuel is burned in a brick furnace lined with fire-brick.

A perfect steam-boiler should be made of the best material sanctioned by use, and should be simple in construction. It should have a constant and thorough circulation of water throughout the boiler, so as to maintain all parts at one temperature.

There should be a combustion chamber so arranged that the combustion of the gases commenced in the furnace may be completed before the escape to the chimney.

Have all parts readily accessible for cleaning and repairs.

In every boiler there should be ample water-surface for the disengagement of the steam from the water in order to prevent foaming. There should also be a large excess of strength over any legitimate strain, and proportioned for the work to be done.

Only the very best gauges, safety-valves, fusible plugs, and other fixtures should be used.

In a *water-tube boiler* there should be from 10 to 12 square feet of heating surface for one horse-power; in a *tubular boiler* 14 to 18 square feet of heating surface for one horse-power; in a *flue boiler* 8 to 12 square feet of heating surface for one horse-power; a *plain cylinder boiler* should have from 6 to 10 square feet of heating surface for one horse-power; a *locomotive boiler* should have 12 to 16 square feet of heating surface for one horse-power; a *vertical boiler* should have from 15 to 20 square feet of heating surface for one horse-power.

When considering the heating surface of a boiler, a vertical or upright surface has only one-half the evaporative value of a horizontal surface above the flamet; that is, the sides of a locomotive fire-box are only half as effective per square foot as the flat top of the box. In flues and tubes, the effective surface, measured on the circumference, is 1¼ times the diameter.

Useful Rules for Calculations.

To find the fire-grate surface of flue boilers.—Square the nominal horse-power, and divide it by the heating surface in *square yards;* the quotient will be the fire-grate surface in square feet—or, one square foot of fire-grate surface per nominal horse-power.

To find the heating surface of a flue boiler.—Square the nominal horse-power as indicated by the manufacturer's receipt or bill of sale, and divide that by the fire-grate surface in *square feet;* the quotient will be the heating surface in *square yards.*

Capacity of boiler flue.—One cubic yard of boiler capacity for each nominal horse-power. *Steam-room* should be about eight times the contents of the cylinder of the engine supplied with steam by the boiler.

Tubular or marine boilers.—Each nominal horse power requires the evaporation of one cubic foot of water per hour; twelve square feet of heating surface, only three-fourths of the whole tube surface being taken as effective; and thirty square inches of fire-grate per nominal horse-power. The sectional area of the tubes to be about one-sixth of the fire-grate.

General rule for all classes of boilers.—Twelve square feet of heating surface and three-fourths square foot of fire-grate per nominal horse-power, are very good proportions.

TEMPERATURE INDICATED BY THE COLOR OF THE FIRE.

To determine the temperature of a furnace fire from the color of the flame:

Faint red	960° F.
Bright red	1,300° F.
Cherry red	1,600° F.
Dull orange	2,000° F.
Bright orange	2,100° F.
White heat	2,400° F.
Brilliant white heat	2,700° F.

How to Care for Boilers.

Every one who owns a steam-boiler, as well as the engineer who is responsible for the same, should at all times exercise the greatest care. A fifteen-story building may be fire-proof and ever so strong, yet a defective boiler in the basement or carelessness in its management, may cause an explosion which will wreck the whole structure. The following suggestions are important:

1. Great care should be exercised to see that safety-valves are ample in size and in working order. Overloading or neglect frequently leads to the most disastrous results. Safety-valves should be tried at least once a day to see if they will act properly.

2. The first duty of an engineer before starting is to see that the water is at the proper height. Do not rely on glass gauges, floats or water alarms, but try the gauge-cocks.

3. The steam-gauge should stand at zero when the pressure is off, and it should show same pressure as the safety-valve when the latter is blowing off. If not, then one is wrong, and the gauge should be tested by one known to be correct.

4. Both gauge-cocks and water-gauges must be kept clean. Water-gauges should be blown out frequently, and the glasses and passages to gauge kept clean.

5. Feed-pumps or injectors should be kept in perfect order, and of ample size. No make of pump can be expected to be continuously reliable without regular and careful attention. It is always safe to have two means of feeding the boiler. Check-valves and self-acting feed-valves should be frequently examined and cleaned. Satisfy yourself that the valve is acting when the feed-pump is at work.

6. Cold water should never be fed into a boiler if it can be avoided, but, when necessary, it should be caused to mix with the heated water before coming in contact with any portion of the boiler.

7. In case of low water immediately cover the fire with ashes (wet if possible) or any earth that may be at hand. If nothing else is handy use fresh coal. Draw fires as soon as it can be done without increasing the heat. *Neither turn on the feed, start or stop engine, or lift safety-valve until fires are out and the boiler cooled down.*

8. Fusible plugs, when used, must be examined when the boiler is cleaned, and carefully scraped clean on both water and fire sides, or they are liable not to act.

9. Moderately thick fires are most economical, but thin firing must be used when draught is poor. Take care to keep the grates evenly covered, and allow no air-holes in the fire. Be especially careful to lay the coal along the sides and in the corners. All lumps should be broken into the size of a man's fist. With bituminous coal, firing in front, and then shoving the coal back, when it is coked, gives the best result. Do not "clean" fires oftener than necessary. The cleaning of the fire is best done, in ordinary working, by a "rake," or other tool, working on the under side of the grate, and not by a "slice-bar," driven into the mass of fuel *above* the grates.

10. Clean all heating surfaces outside and in, or there will be serious waste of fuel. As a rule, never allow over one-sixteenth scales or soot to collect on surfaces between cleanings. Hand-holes should be frequently removed, and surfaces examined, particularly in case of a new boiler, until proper intervals between cleanings have been established by experience. Examine mud-drums and remove sediment therefrom.

11. When foaming occurs in a boiler, checking the outflow of the steam will usually stop it. If caused by dirty water, blowing down and pumping up will generally cure it. In cases of violent foaming, check the draught and cover the fires.

12. Never empty the boiler while the brickwork is hot.

13. Don't indulge in rapid firing. Steam should be raised slowly from a cold boiler.

14. If a boiler is not required for some time, empty and dry it thoroughly. If this is impractical, fill it quite full of water, and put in a quantity of common washing soda.

15. All things about the boiler-room should be kept clean and in good order. Negligence tends to waste and decay.

For the Engineer and Firemen

Always start your engine slowly, so that the air and water condensation can be expelled from your cold cylinder; then you will gradually bring it to its regular speed.

Keep open the drip cock, both in the front and back ends of the cylinder, when the engine is standing still, and never close them until all the water has dripped out.

Never let in any oil or tallow to your cylinder until it is made hot by the steam.

Be careful not to put in too much oil at any time, knowing, as you do, that it will be sent to the feed-water causing your boiler to prime and foam.

Always *oil up* before starting your engine.

Generally, when you pack the piston packing, both cylinder and packing are cold, and if they are screwed or wedged in very tight while in this condition that the expansion, when exposed to the heat of the steam, will induce great rigidity.

Then the oil or lubricating substance cannot enter between the surfaces in contact, and that great friction, heating and cutting will be the result.

When packing loses its elasticity it is no good, and should be removed.

Piston or valve-rod packing, should never be screwed up more than sufficient to prevent it from leaking, and that the softer the packing the longer it will last and the better your engine will run.

For Steam-Heating of Houses.—To estimate for the steam-heating of dwellings it is safe to allow one square foot of boiler surface for each ten square feet of radiating surface. Small boilers should be larger proportionately than large boilers.

Each horse-power of boiler will supply from 250 to 350 feet of 1-inch conducting pipes, which equals about 80 to 120 square feet of radiating surface.

It is safe to estimate that under ordinary circumstances, one horse-power of boiler capacity will heat about as follows:

15,000 to 20,000 cubic feet in brick buildings in blocks.

10,000 to 15,000 cubic feet in brick stores in blocks.

10,000 to 15,000 cubic feet in brick dwellings, exposed all sides.

7,000 to 10,000 cubic feet in brick mills, shops, etc.

7,000 to 10,000 cubic feet in wooden buildings, exposed.

6,000 to 10,000 cubic feet in foundries and wooden shops.

All the joints should be made steam and water tight, as the slightest leak in a steam-heating system is apt to damage furniture, curtains, carpets, etc., if the steam is intended to heat a dwelling. Red or white lead is all right as material to make up joints, but graphite is much better. For gaskets there is nothing better than asbestos.

How to Thaw Out a Frozen Steam-Pipe.—A good way to thaw out a frozen-up steam-pipe, is to take some old cloth, discarded clothes, waste, old carpet, or anything of that kind, and lay on the pipe to be thawed; then get some boiling hot water and pour it on. The cloth will hold the heat on the pipe, and thaw it out in five minutes. This holds good in any kind of a freeze, water-wheel, or anything else.

Steam as a Cleansing Agent.—For cleaning greasy machinery nothing can be found that is more useful than steam. A steam hose attached to the boiler can be made to do better work in a few minutes than any one is able to do in hours of close application. The principal advantages of steam are, that it will penetrate where an instrument will not enter, and where anything else would be ineffectual to accomplish the desired result. Journal boxes with oil cellars will get filthy in time, and are difficult to clean in the ordinary way; but, if they can be removed, or are in a favorable place, so that steam can be used, it is a veritable play-work to rid them of any adhering substance. What is especially satisfactory in the use of steam, is that it does not add to the filth. Water and oil spread the foul matter, and thus make an additional amount of work.

Suggestion for Hot-Water Heating Systems.—Let your "risers" not be less than 1¼", for smaller pipes soon become coated, if the water used contains lime or other matters in solution or suspension.

Galvanized pipe is best; it does not become rusty and discolor the water.

In ordinary pipe be sure to get "galvanized steam," and not "galvanized gas."

Let your draw-off services be for bath 1", to lavatories 1", for hot water ½". Do not make the "draw-offs" too small; it takes too long to drain a pipe of cold water.

The larger the pipes the freer the circulation, and, if you have hard water, they will remain in good order longer.

Be sure that all joints are secure and free from leaks, and always look through a pipe before fitting it in place, to see that there is no dirt or impediment to the flow of the water through it.

Avoid the use of elbows in circulating pipes, use only bends; if you cannot avoid using an elbow, see that it is a round one.

A Cheap Filter.—A cheap filter which any tinner can make is 12 x 6 inches in size, and 8 inches high. The water flows in near the top, and on the top is a door through which to get into it to clean it. The outlet pipe at the bottom projects 2 inches up on the inside to hold the dirt back. A large sponge is placed inside, which forms the filtering medium, which, of course, can be cleaned as often as desired. The place of the sponge may be taken by powdered charcoal placed in a cotton bag.

TABLES OF MEASURE AND WEIGHT

Linear Measure.

12 inches = 1 foot.
3 feet = 1 yard.
5½ yards, 16½ feet = 1 rod.
320 rods, 5,280 feet = 1 mile.
4 rods, 100 links = 1 chain.

Square Measure.

144 square inches = 1 square foot.
9 square feet = 1 square yard.
30¼ square yards, 272¼ square feet = 1 square rod.
160 square rods, 10 square chains = 1 acre.

Cubic Measure.

1,728 cubic inches = 1 cubic foot.
27 cubic feet = 1 cubic yard.
128 cubic feet = 1 cord.
24¾ cubic feet = 1 perch of stone.

Dry Measure.

2 pints = 1 quart.
8 quarts = 1 peck.
4 pecks, 2150.4 cubic inches = 1 bushel.

Liquid Measure.

4 gills = 1 pint.
2 pints = 1 quart.
4 quarts, 231 cubic inches = 1 gallon.

Avoirdupois Weight.

16 ounces, 7,000 grains = 1 pound.
2,000 pounds = 1 ton.
2,240 pounds = 1 long ton.

Troy Weight.

24 grains = 1 pennyweight.
21 pennyweights = 1 ounce.
12 ounces, 5,760 grains = 1 pound.

Apothecaries' Weight.

20 grains = 1 scruple.
3 scruples = 1 fluid dram.
8 fluid drams = 1 ounce.
12 fluid ounces = 1 pound.

Apothecaries' Measure.

60 minims = 1 fluid dram.
8 fluid drams = 1 ounce.
10 fluid ounces = 1 pint.

Time Measure.

60 seconds = 1 minute.
60 minutes = 1 hour.
24 hours = 1 day.
7 days = 1 week.
365 days = 1 year.
366 days = 1 leap year.

Circular Measure.

60 seconds = 1 minute.
60 minutes = 1 degree.
360 degrees = 1 circle.

English Money.

4 farthings = 1 penny.
12 pennies = 1 shilling.
20 shillings = 1 pound.
21 shillings = 1 guinea.

Surveyors' Linear Measure.

7.92	inches	= 1 link.
25	links	= 1 rod.
100	links or four rods	= 1 chain.
80	chains	= 1 mile.

Paper Measure.

24 sheets = 1 quire.
20 quires = 1 ream.
2 reams = 1 bundle.
5 bundles = 1 bale.

NOTES.—The chain (*ch.*), used by surveyors is called Gunter's chain, and consists of 100 links (*l.*). Its length is 792 inches, equal to 66 feet, or 4 rods. Its divisions are decimal, so that chains and links may be written as one number in the same manner as dollars and cents,

Thus, since 35 links equal .35 of a chain, 35 links is written *25.35 chains*.

Any year the number of which is exactly divisible by 4, but not by 100, is a leap year. When the number is divisible exactly by 400 it is also a leap year.

The solar or tropical year has a length of 365 days, 5 hours, 48 minutes, 49.7 seconds.

The Metric System.

1. The Metric System of weights and measures has been legalized in the United States. Its fundamental unit is the meter, from which all the other units of the system are derived. The meter is equal to 30.37 + inches.

2. The meter is defined as the ten-millionth part of the distance from the Equator to the North Pole, measured on the meridian passing through Paris. Later measurements have shown that the meter does not exactly correspond with the length required by the definition.

3. The principal point of superiority of the metric measures is in their decimal scale. As in the case of United States money, several denominations may be written together as one number. Thus, 9 Mm. 7 Km. 5 Hm. 3 Dm. 8 m. 4 dm. 6 cm. 5 mm. may be written as one denomination: 97538465 mm., or 9753846.5 cm., or 97538.465 m., or 9.7538465 Mm., etc. Reduction ascending and reduction descending thus become a mere matter of moving the decimal point.

Metric Measures.

10 millimeters (*mm.*)	=	1 centimeter, . . . *cm.*
10 centimeters	=	1 decimeter, . . . *dm.*
10 decimeters	=	1 meter, ... *m.*
10 meters	=	1 dekameter, . . . *Dm.*
10 dekameters	=	1 hektometer, . . *Hm.*
10 hektometers	=	1 kilometer, . . . *Km.*
10 kilometers	=	1 myriameter, . . *Mm.*

Metric Square Measure.

100 sq. millemeters	=	1 sq. centimeter,
100 sq. centimeters	=	1 sq. decimeter,
100 sq. decimeters	=	1 sq. meter,
100 sq. meters	=	1 sq. dekameter,
100 sq. dekameters	=	1 sq. hektometer,
100 sq. hektometers	=	1 sq. kilometer.

NOTE.—The principal unit is the square meter, equal to 1.196 sq. yds.

Metric Land Measure.

100 centares (*ca.*)	=	1 are, ... *a.*
100 ares	=	1 hectare, ... *Ha.*

NOTE.—The *are*, equal to a square dekameter, or 100 square meters, is 119.6 square yards, very nearly. The *hektare* is equal to 2.471 acres.

Metric Cubic Measure.

1000 cubic millimeters	=	1 cubic centimeter,
1000 cubic centimeters	=	1 cubic decimeter,
1000 cubic decimeters	=	1 cubic meter.

NOTE.—The *cubic meter* is equal to 35.3166 cubic feet. When used to measure *wood* or *stone*, it is called a *stere* (pronounced *stair*). Ten *steres*, called a *dekastere*, are equal to 2.759 cords.

Metric Capacity Measure.

10 milliliters (*ml.*)	=	1 centiliter, (*cl.*)
10 centiliters	=	1 deciliter, (*dl.*)
10 deciliters	=	1 liter, (*l.*)
10 liters	=	1 dekaliter, (*Dl.*)
10 dekaliters	=	1 hektoliter, (*Hl.*)
10 hektoliters	=	1 kiloliter, (*Kl.*)

The *liter*, (*l.*), equal to a cubic decimeter, is 61.028 cubic inches, 2.1135 pints, or 33.816 fluid ounces. The unit of measure for small quantities of liquids, as in mixing medicines and in philosophical experiments, is the milliliter, equal to 16.23 minims.

A gallon is equal to 5.785 *l.*, and 2.8375 bush. make a *Hl.*

Metric Weight.

10 milligrams (*mg.*)	=	1 centigram, (*cg.*)
10 centigrams	=	1 decigram, (*dg.*)
10 decigrams	=	1 gram, (*g.*)
10 grams	=	1 dekagram, (*Dg.*)
10 dekagrams	=	1 hektogram, (*Hg.*)
10 hektograms	=	1 kilogram or kilo, *Kg.*
1000 kilos	=	1 tonne, (*T.*)

NOTE 1.—The *gram* is equal to 15.4323 grains, the *kilo* to 2.2046 lb. avoirdupois, and the *tonne* to 2204.6 lb. avoirdupois. *Tonne* is rarely used, the number of *kilos* being preferable.

The weight of one *cubic centimeter* of pure water at its greatest density (39.2° Fahrenheit) is a *gram;* the weight of a *cubic decimeter*, or a *liter*, of water at the same temperature is a *kilogram*, or a *kilo*, and the weight of a cubic meter of water is a *tonne*.

The original 5-cent nickel weighs 5 grams, and is 2 centimeters in diameter.

Equivalents.

Metre	= 39.37 inches (3¼ ft. nearly).
Kilometre	= .62138 mile (⅝ nearly).
Square metre	= 1.196 square yards (1 1-5 nearly).
Cubic metre	= 1.308 cubic yards (1 1-3 nearly).
Litre	= 1 cu. dm.
	= 1.0567 liquid quarts (1 nearly).
	= .908 dry quart (.9 nearly).
Kilogram	= The weight of 1 cu. dm. of water at 29.2 Fah.
	= 2.2046 pounds av. (2 1-5 nearly).
Hektare	= 10,000 sq. m.
	= 2.471 acres (2½ nearly).
Stere	= 1 cu. m.
	= .2759 cord (3-11 nearly).

Miscellaneous Tables.

Linear Measures.

3 barley-corns, or sizes	= 1 inch.	Used by shoemakers.
4 inches	= 1 hand.	Used to measure the height of horses at the shoulder.
21.888 inches	= 1 sacred cubit.	
6 feet	= 1 fathom.	Used to measure depths at sea.
3 feet	= 1 pace.	
1.152⅔ common miles	= 1 geog. mi.	Used to measure distances at sea.
3 geographic miles	= 1 league.	

Book Measure.

A sheet folded into	*The book is*	*A sheet of paper makes*
2 leaves	a folio,	4 pp. (pages)
4 "	a quarto or 4to,	8 "
8 "	an octavo or 8vo,	16 "
12 "	a duodecimo or 12mo,	24 "
16 "	a 16mo,	32 "
18 "	an 18mo,	36 "

The weight of a bushel of certain articles is as follows:

Barley,	48 lb.	Hemp seed,	44 lb.
Beans,	60 "	Oats,	32 "
Buckwheat,	42 "	Onions,	60 "
Bran,	20 "	Peas,	60 "
Corn,	56 "	Potatoes,	60 "
Corn meal,	50 "	Rye,	56 "
Corn in ear,	68 "	Salt,	56 "
Clover seed,	60 "	Timothy seed,	45 "
Flax seed,	56 "	Wheat,	60 "

Miscellaneous Weights and Measures.

100 lb. of grain or flour	= 1 cental.
100 " dry fish	= 1 quintal.
100 lb. of nails	= 1 keg.
196 " flour	= 1 barrel.
200 " beef or pork	= 1 barrel.
240 " lime	= 1 cask.
280 " salt at N. Y. Salt Works	= 1 barrel.
Keg powder,	= 25 pounds.
Stone of lead or iron	= 14 pounds.
Pig " "	= 21½ stone.

Anthracite coal, broken, cubic foot averages 54 lbs.

A ton, loose, occupies 40 to 43 cubic feet.

Bituminous coal, broken, cub. ft. averages 49 lbs.

A ton, loose, occupies 40 to 43 ft.

Cement (Hy.) Rosendale,	Bush.	= 70 lbs.
" " Louisville,	"	= 62 "
" " Portland,	"	= 96 "
Gypsum, ground,	"	= 70 "
Lime, loose,	"	= 70 "
" well shaken,	"	= 80 "
Sand at 98 lbs. per cu. ft.	"	=122½ "

18.29 bush. = ton 1.181 ton = cu. yd.

A cable's length	= 240 yards.
20 articles	= 1 score.
12 dozen	= 1 gross.
12 gross	= 1 great gross.
A cord of wood	= 128 cubic feet.
1 hand	= 4 inches.
1 span	= 9 inches.

Shoemaker's Measure.

No. 1, of small size is 4⅓ inches long.

No. 1, of large size is 8 11-24 inches long.

Each succeeding number of either size is ⅓ of an inch additional length.

60 pairs of shoes = 1 case.

An American Car Load

Of 20,000 lbs. would contain the following articles:

70 bbl. salt. 70 of lime. 90 of flour. 70 of whiskey. 200 sacks of flour. 6 cords of soft wood. 15 to 20 head of cattle. 50 to 60 head of hogs. 80 to 100 head of sheep. 6000 feet of solid boards. 340 bush. of wheat. 400 of corn. 680 of oats. 400 of barley. 360 of flaxseed. 360 of apples. 430 of Irish potatoes. 300 of sweet potatoes. 100 of bran. 130 to 190 barrels of eggs. 15,000 to 26,000 lbs. of butter. 200 kegs of nails.

On roads, with track in best condition, a car load is from 24,000 to 60,000 lbs.

Miscellaneous Equivalents.

231 cu. in.	= 1 gal. liquid measure.
268 4-5 "	= 1 gal. dry measure.
277.274 "	= 1 imperial gal. of Great Britain.
2150.42 "	= 1 bushel of U. S.
2216.192 "	= 1 " " Great Britain.
2747.7 "	= 1 heaped bushel.
1000 oz. or 62½ lb.	= 1 cu. ft. of pure water.
8 1-3 lb. pure water	= 1 gallon.
5760 grains	= 1 lb. Troy or apothecaries'.
7000 "	= 1 " avoirdupois.
24.75 cu. ft.	= 1 perch of masonry.
36 to 45 cu. ft.	= 1 ton anthracite coal.

Bible Weights and Measures.

A day's journey	=	33 1-5 U. S. miles.
A Sabbath-day's journey	=	1 " mile
Ezekiel's reed	=	11 feet nearly.
Cubit—Hebrew	=	22 inches, nearly.
" Greek	=	18 " about.
A finger's breadth	=	1 inch, "
A shekel of silver	=	62½ cents.
A " gold	=	$8.09.
A talent of silver	=	$1,518.32.
" gold	=	$23,309.
A piece of silver	=	13 cents.
A farthing	=	3 "
A gerah	=	2½ "
A mite	=	1½ mills.
A homer (as dry measure)	=	11 1-9 bushels.
A " (" liquid ")	=	70 gallons and 5 pints.
An ephah or bath	=	7 " " 4 "
A bin	=	1 gallon " 2 "
A firkin	=	7 "
An omer	=	6 "
A cab	=	3 "
A log	=	¾ "

Capacity of Cylindrical Cisterns.

The following table shows the capacity in gallons for one foot in depth of cylindrical cisterns of any dimensions. Find the diameter of any given cistern and multiply the number of gallons for one foot by the depth of the cistern, and you will have its volume in gallons:

Diameter.	Gallons.	Diameter.	Gallons.
2 feet	19	6½ feet	206
2½ feet	30	7 feet	239
3 feet	44	8 feet	313
4 feet	78	9 feet	396
4½ feet	99	10 feet	489
5 feet	122	11 feet	592
6 feet	176	12 feet	705

Mensuration; or, Useful Rules for Computing Measurements.

Area of a triangle = base × ½ altitude.

Area of a parallelogram, multiply base by altitude.

Area of a trapezoid = altitude × ½ the sum of parallel sides.

Area of a trapezium = divide into two triangles and find area of the triangles.

Circumference of circle = diameter × 3.1416.

Diameter of circle = cicumference × .3183.

Area of circle = square of the diameter multiplied by .7854.

Area of circular ring = diameters of the two circles × difference of diameter and that product by .7854.

Side of square that shall equal area of circle = diameter × .8812 or circumference × .2821.

Diameter of circle that shall contain area of a given square = side of square × 1.1284.

Surface of cylinder or prism = area of both ends + length × circumference.

Contents of cylinder or prism = area of end × length.

Surface of sphere = diameter × circumference.

Contents of sphere = diameter³ × .5236.

Contents of pyramid or cone = area of base × ⅓ altitude.

Surface of frustum of cone or pyramid = sum of circumference at both ends × slant height + area of both ends.

Contents of frustrum of cone or pyramid = multiply areas of two ends together and extract square root. Add to this root the two areas and × ⅓ altitude.

Contents of a wedge = area of base × ½ altitude.

Lumber and its Measurement.

A board foot is 1 foot long, 1 foot wide, and 1 inch thick, and is used as the unit of measurement.

What is called *scantling lumber* is 3 or 4 inches wide, and from 2 to 4 inches thick. *Joist* is usually narrow and deep. When lumber is heavier than joist or scantling it is called *timber*. Thick boards are called *planks*. The usual outside covering of wooden houses is *siding*.

If lumber is less than 1 inch in thickness it is considered as inch in computing the measurement. But a fraction greater than a half-inch is called an inch, and if less than a half it is rejected. A board 4 5-6 inches wide would be considered as 5 inches.

A board 16 feet long, 12 inches wide, and 1 inch thick would contain (16 × 12 × 1) –:– 12, or 16 feet. A board 12 feet long, 14 inches wide, and 3 inches thick, would contain (12 × 14 × 3) –:– 12, or 42 feet, board measure.

To find the number of board feet in any pile of lumber: Multiply the length in feet by breadth in feet and by thickness in inches, and the result by number of boards.

To Compute Volume of Square Timber.

When all the dimensions are in feet:

Rule. Multiply the breadth by the depth and that product by the length, and the product will give the volume in cubic feet.

When either of the dimensions are in inches:

Rule. Multiply the length, breadth and depth and divide by 12.

When any two of the dimensions are in inches:

Rule. Multiply the length, breadth and depth and divide by 144.

To Measure Round Timber take the girth in inches at both the large and small ends, add them, divide by two, which gives the mean girth; then multiply the length in feet by the square of one-fourth of the mean girth, and the quotient will be the contents in cubic feet. This rule is commonly adopted, and gives four-fifths of the true contents, one-fifth being allowed to the purchaser for waste in sawing.

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THE FAMILY DOCTOR

CAUSES, NATURE AND SIGNS OF DISEASE—CLASSIFICATION OF DISEASES —THE BEST REMEDIES—RELIEVING PAIN—PRINCIPAL MEDICINES —NURSING AND CARE OF THE SICK

—BY—

HENRY HARTSHORNE, M.D.

WHAT IS DISEASE

It was a rather strange idea of a recent distinguished writer upon Hygiene, that perhaps, if we understood perfectly all the laws of health, and obeyed them all, life might be indefinitely prolonged. Nature around us pronounces otherwise. Every tree, though it live a thousand years, withers, root and branch, at last. All the animals, from the long-lived elephant and tortoise down to the *ephemeral* insect floating on the breeze, have set terms of life. On this globe of ours, whatever organism is born, dies. *Man's body* furnishes no exception; his spirit, only, is immortal.

The marvel is, that so delicate a mechanism as the human body can survive for a single year, amongst the various perils that surround it. Yet we live on, some of us, accidents apart, for a good while. Most persons fail to reach advanced age, because of disease. What is disease?

It is *something either being or acting wrong in the body*. There may be as many kinds of disorder, or disease, at least, as there are organs of the body. *More* than that there really are, however; because *complications* of diseases occur, and each organ, or the general system, may be out of sorts in a large number of different ways.

First, it will be well for us to consider what makes the body, or parts of it, get out of order.

Causes of Disease.

These may be stated together, thus: as causes which are

Hereditary: examples (though *not always* inherited), consumption, gout, epilepsy, cancer.

Functional: that is, depending upon the action, either too great or too little, of one or more of the organs, or of the body generally. Examples: over-exertion, over-excitement, loss of sleep; or, on the other hand, want of exercise.

Mechanical: as wounds or injuries of various kinds, tight-lacing, etc.

Conditional: as extremes of heat or cold, sudden changes of temperature, dampness of dwellings.

Digestive: as poisoning, unwholesome food, intemperance, abuse of medicine; and, on the other hand, starvation.

Obstructive: as neglect of the bowels, uncleanliness of the skin, ill ventilation.

Contagious: as small-pox, itch, hydrophobia.

Atmospheric: as autumnal fevers, yellow fever, cholera.

Hereditary Disease.

We often see consumption affecting several members of the same family through several generations. The same is true of insanity. Gout is many times transmitted from father to son, but seldom to a third generation. Epilepsy, also, does not often extend to grandchildren, nor does cancer. Each of these diseases may come *without* inheritance. Then, we can sometimes, though not always, find at least a partial explanation of their origin otherwise.

Not all (if there be several) children in a family are likely to have the inheritable disease. Perhaps all may escape it; now and then it comes again in *their* children, having skipped a whole generation.

Children are not *born* with transmitted diseases; except syphilis, among those of real constitutional inheritance, and a few of the *contagious* affections. They are commonly affected with them about the time of life when their parents were so. Thus *scrofulous* disorders of the eyes, ears, skin, glands, and bones, are apt to show themselves in childhood; *consumption* of the *lungs*, in youth or early maturity; *gout* near middle age; *apoplexy*, and *disease of the heart*, from fifty to seventy years; early *deafness*, or *blindness*, at various periods in different families.

Sometimes the inherited taint is *modified* in transmission. Thus the children of a gouty person may have, not regular gout, but neuralgia; and the offspring of one who is insane may have inflammation of the brain, or convulsions, etc. Children of *intemperate* parents are very likely to have some impairment of their nervous system, and often die in infancy.

Besides these special transmissions of tendencies to disease, there is a gradually degenerating influence in families, and even whole populations, from *unhealthy living*. It is most observed in large cities.

Functional Causation.

Over-exertion may produce exhaustion, which, in a person before feeble, may end in death. Or, short of this, there may be brought on a state of weakness slow to be recovered from. In such a state, moreover, the body is less capable of resisting all causes of disease than when in full vigor.

Excessive efforts may, at the time, strain muscles, or even burst the heart, or the great main artery, the aorta.

Over-excitement of the brain is, in many cases, when it lasts but for a short time, followed simply by exhaustion and gradual return, through repose, to ordinary health. But long-continued excessive mental excitement may produce either *inflammation of the brain*, *insanity*, or prolonged *brain-exhaustion*. Loss of sleep, however induced, endangers such effects. Hardly any one can survive deprivation of sleep for so long as two weeks at a time; a single week would finish most peoples' lives.

Mechanical Injuries.

Broken limbs, displaced joints, and wounds, are often causes of disease. Tight-lacing is also a mechanical cause of interruption to the right action of the lungs and heart, crowding these and other organs into too small a space. *Position* of the body acts mechanically, sometimes, in promoting certain maladies. Whoever is predisposed to apoplexy, is especially liable to have an attack while stooping, or lying with the head low.

Conditional Causes.

By these we mean high heat, great cold, dampness, sudden changes and partial exposures of the body to either extreme, or electrical influences; these last being very little understood.

Sunstroke is a familiar accident in warm climates. *Cold-stroke* is less common, but I have known it to be almost as sudden as the opposite. *Continued heat* predisposes to disorders of the *liver*, *stomach* and *bowels*. *Cold*, with *dampness*, promotes affections of the *lungs* and other organs within the *chest*.

Catching cold: what is it? For example; one comes in warm from exercise on a spring or autumn day, takes off his coat, and sits down near a window to "cool off." His skin is relaxed and moist with perspiration, whose evaporation, under the window-breeze, goes on rapidly. Suppose the breeze to blow on his back, between his shoulders. That part is cooled more than the rest of his

THE AGE OF MACHINERY

The old hand-press followed by the perfecting press; the sickle, cradle and flail succeeded by the harvester; the carriage displaced by the automobile, are types of progress made in perfecting machinery.

body. Its blood-vessels and skin-pores contract under the cooling process, detaining the perspiration and driving the blood inward from the surface. Some of the waste matter which the skin would have thrown off by sweating, but for this chilling, is now kept in the blood.

The result may be made more serious than a mere cold. If there be a weak or susceptible part within the chest (bronchial tubes, lungs, pleura, or heart) *it* suffers from overloading with blood and waste material; and we have a *bronchitis*, a *pneumonia*, a *pleurisy*, or an *inflammation of the heart*. Among these, the first is the most frequent, and the last the least so; but even it does sometimes happen, especially in a rheumatic person.

Digestive Morbid Causes.

Excess of food may cause indigestion at the time; and, if often repeated, habitual indigestion—called *dyspepsia*. A less amount of excess or superfluity may bring on an overfulness of rich blood in the system—*plethora*. Deficiency of food weakens, and so promotes attacks of many disorders; varying according to constitution and exposure.

Indigestible articles may produce common *indigestion*, with windy pain in the stomach, nausea, etc.; or *cholera morbus*, which is much more severe; occasionally dangerous.

Obstructive Causes.

Everything that interferes with the clearing out from the body of all waste and dead material, by the excretions, tends to injure health. Breathing foul air, makes the blood impure, and promotes diseases of various kinds. Uncleanliness of the skin acts in the same way to a less certain and serious degree. Neglect of the bowels leads to costiveness, headache, and dyspepsia; now and then it brings on *hernia* (rupture) which may endanger life, or an obstruction of the bowels within the abdomen, from which not many who suffer it recover.

Contagion.

This is, strictly defined, conveyance of disease by touch or contact. But some (not all) disorders, which may be transmitted by actual touch, pass also to a short distance through the air. This is true of typhus, small-pox, chicken-pox, measles, scarlet fever, mumps, and whooping-cough, certainly; perhaps, in rare instances, of diphtheria. Hydrophobia, syphilis, and gonorrhœa are conveyed only by contact and *inoculation;* that is, introduction of the virus of the disease into the blood, or, at least, under the skin. These diseases, are, in fact, the common diseases that are *certainly* contagious.

Infection: Atmospheric Causation.

Certain places, at particular times, are infected with maladies which attack a greater or less number of those living or visiting there. Some of these diseases are said to be endemic; that is, they are limited to quite clearly defined places. Thus, *ague* or *malarial fever* and autumnal bilious or *remittent fever* are found to prevail in some neighborhoods every fall and spring; while other places, perhaps not more than a mile distant, are clear of them. *Yellow fever* is an endemic disease of the vicinity of the seacoast of Cuba, while the higher regions of the same island are free from it. *Cholera* is endemic only in Hindustan, near the banks of the Ganges River.

When these, or any other diseases, overpass limited places, and appear in many localities, they are said to be epidemic. Yellow fever is often epidemic. Cholera, once in several years, starts out from India, and travels mostly westward.

Plague was once universally, and is now generally, believed to be extremely contagious.

Erysipelas and *puerperal fever* cannot be positively said never to be extended from one person to another. *Diphtheria*, likewise, is sometimes given by one person to another; Usually, however, diphtheria is either a local endemic or a slowly migrating epidemic disorder.

Influenza is always an epidemic; nobody imagines it to be contagious from person to person. The same rule is also of *dengue*, the "breakbone fever" of the Southern States, and of a form of *dysentery* prevalent during the summer and autumn in some localities.

Children sometimes die of old age. That is, their *original endowment of life energy* was so small as to be exhausted during infancy. Others die very soon because of some *defective development of a vital organ* or organs.

At any period of life the disorders to which we are all subject consist in one or both of the following changes:

1. Disturbance of the *action* of some organ or organs by a morbid cause.

2. Alteration of the *structure* or *substance* of one or more organs; inducing, of course, change also in its action.

To the first of these the term "functional disorders" is applied; those of the second sort are "organic diseases." *Temporary* changes in the substance or structure of an organ often occur, as when it is *inflamed*, from which there may or may not follow permanent organic alterations.

Only *slight* affections of even small parts of the body can take place and last for any time, without involving the general system more or less in disturbance. Also, a disorder beginning in the blood, and thus being a *general* malady, nearly if not quite always puts some of the functions of the organs out of order. Still some cases do begin in, and chiefly affect, particular organs; these we call local disorders; others begin in the blood, and involve the body in many of its functions; those are well described as general diseases. We will give attention here, first, to the nature of the disturbances coming under the former of these heads.

Local Disorders.

Medical books speak of irritation, congestion (*hyperæmia*), inflammation, mortification, and degeneration, as affections of organs of the body, Atrophy, hypertrophy, and morbid growths are such also; and less purely local, but often more or less restricted, are dropsical effusions.

Irritation.

An eye is *irritated* when a spark from a locomotive, or a bit of sand, or an inverted eyelash, get into it. A mustard-plaster first stimulates the circulation of the skin where it is applied; this may be quite within the bounds of healthy action, if the mustard be soon withdrawn. If it remain longer, *irritation* is shown by *pain* and *soreness;* next, if still allowed to act, it will produce *inflammation*. Irritation of the stomach may be caused by indigestible food, or, more serious in degree, by certain poisonous substances; as strong acids, alkalies, arsenic, or corrosive sublimate.

Congestion (or Hyperæmia).

This may be an *active* flowing of more blood than common *through* a part, or a *passive* collection of blood *in* the part. Stimulation produces the former; when it passes beyond the line of health into irritation, passive congestion occurs at the centre of the irritation, active congestion in the parts around it. Determination of blood towards any portion of the body may be, when very decided, called *local hyperæmia*. A *bloodless* condition of an organ is called a local *anœmia*. This first simply means *excess* of blood; the second, *deficiency* of blood.

Inflammation.

All the world knows when a hand, a foot, or an eye is *inflamed*. Proverbially, the signs of this are *redness*, *heat*, *pain*, and *swelling*. The redness is owing to the excess of blood; the heat to the same cause, with also probably some increase of chemical change in the part. Pain is not quite so clearly to be accounted for. Pressure on a nerve is known to cause pain; and the excess of blood beating on a part at whose *centre* is *stagnation*, must induce considerable pressure. Nerve-pain (neuralgia), however, often occurs without inflammation and without pressure. Some one has wisely said that pain is always a sign of a tendency in the part towards death. It is, at least, indicative of *lowered vitality*, local or general; and that is present at the *centre* of an inflamed organ, while *around it* there may be the heightened activity of stimulation. In a *boil*, and yet more fully in a *carbuncle*, we see the *dead centre* (core) of the violent inflammation, when its force is nearly spent.

The *swelling* of an inflamed part is due in considerable degree to the accumulation of blood in it. But, under the pressure of the heightened circulation, some of the *lymph* (watery portion) of the blood escapes from the blood-vessels into the substance of the part. This undergoes changes, which are important.

An active or *acute* inflammation may end in several ways:

1. RESOLUTION is the early passing off of all the inflammatory symptoms, leaving almost no sensible change in the part.

2. EFFUSION OF LYMPH, not at once absorbed, shows itself in bands which glue together tissues naturally movable, or in a collection of fluid (serum), constituting a form of local dropsy. In an attack of pleurisy, both of these results may follow instead of resolution.

3. SUPPURATION is the formation of pus; that is, yellow matter, which is very seldom absorbed, and whose best destiny is to be got out of the body by an opening, natural or artificial, at or near the external surface. Every "gathering" or abscess is an example of this. *Pyæmia* is a general disorder of the system, with a disposition towards the formation of collections of pus in different organs, with fever and much weakness, endangering life.

4. MORTIFICATION, also called *gangrene*, or *sloughing*, is the actual death of the part. Frozen feet mortify, not from inflammation, but from the directly killing effect of cold. Inflammation does not often end in mortification; if it does so, it is either from the extreme intensity of the inflammatory process, or from a very low vital condition of the patient affected.

Inflammation is modified considerably by specific causes of disease. A gouty toe is one example of this; a wrist or elbow inflamed with rheumatic fever is another. The sore throat of quinsy, that of scarlet fever, and that of diphtheria, are all *inflammations*, yet each somewhat different from the others. The pustule of vaccination and that of genuine small-pox are not precisely alike; and still different is that of chicken-pox; and so on with other specific diseases.

Chronic inflammation is not a desirable term, though it is used in all medical books. In it, redness, pain, or at least soreness, and more or less swelling, are present, in varying degrees; but there is no *effusion of lymph*, which really is the characteristic of a true inflammation. *Irritability* is a usual part of what is called chronic inflammation; we might often with advantage speak of this in describing the disorder: thus, irritable eyes, irritable stomach, irritable bladder, irritable womb, irritable brain, etc.

Hypertrophy or Overgrowth.

Overgrowth is the meaning of this word; increase in size without essential change in the nature of a part. An organ may enlarge very much, with a great change in its character; for example, a tumor of the breast, or a dropsy of the head. Again, an organ may be stretched or dilated without even an increase of its substance.

The heart exemplifies two of these changes in different instances. If one of its valves through which the blood passes becomes obstructed from disease, the heart has to *labor* more than usually to compel the blood to pass by the obstruction. Like other muscles (the heart being really a hollow muscle), this extra labor may have either of two results, according to the conditions present. If the person's constitution be strong, and his blood well nourished, the much-worked heart will grow thicker and more powerful with the exercise. This is *hypertrophy*. But, if the contrary be the case, with a feeble system and poor blood, the heart is weakened by its excess of labor, and it stretches or becomes thin (attenuated) and dilated.

The thickening of the skin of a workingman's hands shows an increased growth from habitual rough usage. A *corn* is a hypertrophy, and so is a *wart;* both involving almost entirely the outer skin or cuticle. *Wens* and *pimples* show a greater change of substance with enlargement.

Atrophy and Degeneration.

Atrophy is the opposite to hypertrophy. Want of blood or of the supply of nervous energy will cause an organ to shrink away. So a palsied hand often, in time, withers to half its original size. Atrophy occurs

naturally, all over the body, with old age. First the fat is absorbed, then the muscles, and afterward other parts.

Degeneration.—Instead of lessening in size, however, from loss of life-force, an organ may grow larger, with change of substance. This is *organic degeneration*. The substance taking the place of the natural tissue of the part is always inferior in character to that tissue. Thus *fat* may take the place of *muscle*, as in "fatty degeneration of the heart." Or bone-like material may form in place of the proper substance of the arteries; making "ossification" of those vessels. Or the liver or kidney may be enlarged, the normal cells of either organ being replaced by a material like the areolar ("cellular") tissue of the surface of the body under the skin. Tubercle, of the lungs or other parts, is essentially a kind of degeneration; although it often follows attacks of inflammation. Acute and chronic inflammation of various organs is frequently followed by hardening or softening; both of these being modes of degenerative alteration.

Dropsy.

Seldom does an accumulation of water occur in one part of the body without some previous general disorder of the system, or at least an affection of some of the great organs: the *heart*, *liver*, or *kidneys*. We do sometimes meet with "white swelling" of the knee; but nearly always there are also signs of a "scrofulous" constitution to predispose to it.

Inflammation may, however, cause an effusion of serum, which remains after the acuteness of the attack has passed. The simplest illustration of this is seen in a *blister*.

Suppose mustard to be applied to the skin. First, we see *stimulation* shown by redness and heat, with very little if any swelling, and no pain. Next, *irritation*, with soreness and pain, perhaps quite severe; then *inflammation*, followed by *effusion*, which raises the skin into what we call a "blister."

So, also, when the pleura, which lines the ribs and wraps the lungs, is inflamed, it throws out in a few days more or less lymph, as an effusion. If this is copious in amount, it presses the lung away, and interferes with its expansion in breathing. This is sometimes so serious a trouble as to induce physicians to *tap* the chest and draw off the water to relieve the oppressed lung. Likewise, inflammation of the covering of the heart (*pericarditis*) may result in a serious effusion within the pericardial sac, clogging the heart so as not infrequently to cause death. *Hydrocephalus*, or water on the brain, may originate in a similar way.

Dropsy of the chest, however, dropsy of the head, dropsy of the abdomen (*ascites*), and general dropsy, are much more often brought on by obstruction of the circulation, with thinning of the blood, from disease of the *liver*, *kidneys*, or *heart*, or two or more of those organs at the same time. *Ovarian* dropsy attends a disease of one or both of the ovaries.

Œdema is a watery swelling of a part of the surface of the body or limbs.

EMPHYSEMA is a puffiness of the skin, or lungs, from accumulation of air in the cellular substance of the part affected.

Mortification.

When a part, as a toe, a whole foot, leg, or arm dies, while the rest of the body lives, it is said to *mortify*, *slough*, or suffer gangrene. Once in a while the feet of an old person may undergo slow and dry gangrene. When an artery, as that of an arm, is plugged up by a clot, the arm is apt to mortify in consequence. Frozen feet or toes often die and slough off. Sometimes, especially in ill-ventilated hospitals, stumps of amputated limbs, and wounds of various kinds, *slough* instead of healing (hospital gangrene). Quite rarely, *sore mouth* in children may become gangrenous; and even a lung, or a portion of it, may become the seat of gangrene. In the last case, the patient is almost sure to die.

Mortification of a part is always more or less dangerous to the life of the whole body in two ways. First, the sloughing process may extend gradually from the part affected towards the centre of the body; and thus, *involving vital parts*, it may become fatal. Or dead matter from the gangrenous portion may be *absorbed by the vessels*, and so poison

the blood (*septicæmia*) in a manner seldom recovered from.

When mortification is confined to a small part of the body, as a frozen toe or finger, the rest of the system being in a healthy state, a line of demarcation naturally forms, separating the dead from the living tissues. In some cases, a surgeon will then consider it best to hasten and complete the process; removing the sloughing part, by an operation. In other instances, the dead parts will drop off, leaving a surface which will gradually heal.

Morbid Growths.

Warts, corns, bunions, wens, moles, bony enlargements, fibrous and fatty tumors, are all unsightly, and the last named may be considerably inconvenient. But they do not of themselves tend to undergo such increase or morbid changes as to be dangerous to life. They may therefore, by comparison, be called *innocent* growths.

MALIGNANT tumors are generally included under the name *cancer*. They tend to grow indefinitely, at the expense of the neighboring parts and of the general system. They often change their character, becoming open, discharging, offensive sores; the seat, moreover, generally of severe pain. At last, the whole body of a cancerous patient becomes unhealthy; and the end, after various periods, is death.

Cancers may be either *schirrus*, *colloid*, or *encephaloid*. *Schirrus* is hard *cancer*. *Colloid* is jelly-like. *Encephaloid* is soft, almost like brain substance.

The parts of the body most liable to be attacked by cancer (especially after middle life) are the womb, the female breast, the stomach, and the lower bowel (*rectum*); but various other organs are sometimes invaded by it. *Schirrus* is most apt to be met in the breast, stomach or bowel; *colloid*, in the stomach, bowel, or covering of the bowels (*mesentery*, *peritoneum*). *Encephaloid* may occur in any organ; it is the only kind ever seen in the eye, liver, kidney, lung, etc.

GENERAL DISORDERS

We may name these as *debility*, *anœmia*, *plethora*, *cochexio*, *neuratoxia*, *toxœmia*, and *fever*.

Debility.

One is apt to feel *weak*, when anything whatever is the matter. This may arise from loss of blood, from excessive fatigue, from continued illness, or from a severe shock to the system from any cause. Either of these may cause depression or prostration, of which the extremest degree is called collapse.

In the beginning of all such affections, the weakness is that of oppression. The organs of the body are *clogged*, so to speak; skin, kidneys, bowels, etc., are, for the time, hindered in their action, and the loaded blood fails to stimulate aright the various functions,

It is important, in treating debility, to distinguish of what kind it is. *Exhaustion*, as after long illness, is to be recovered from, with time, under nourishing food, rest, pure air, etc. *Depression*, or prostration, as from a severe shock, by warmth, rest, and stimulation, according to the nature and degree of the case. *Oppression* of the organs, at the onset of a disease, is best relieved by unloading the system with purgative medicines, and those which promote the action of the skin and kidneys; sometimes, in an early stage, by the withdrawal of blood from the arm, or by leeches or cups from a central part.

Anæmia and Plethora.

Poverty of blood may result from various diseases, or from loss of blood, too long nursing, etc. Weakness accompanies it, of the kind above called exhaustion. An anæmic person is usually pale (though perhaps easily flushed by excitement), rather thin, and "nervous." There is a form of this disorder called progressive pernicious anæmia, which cannot be accounted for by ordinary causes, and which it is almost or quite impossible to cure by any treatment.

Plethora is the opposite of anæmia. In it, the red corpuscles of the blood are too numerous, and the blood itself is redundant in amount. A plethoric person is round and plump (not necessarily *fat*), with full blood-vessels and a high color. Such an one is

more liable than others, in early life, to *acute inflammations* and *active hemorrhages;* after middle age to *apoplexy*.

Cachexia or Diathesis.

By this is meant some abnormal condition of the constitution.

Leukæmia (or leucocythæmia) is a disease in which there is an *excess of white or colorless corpuscles* in the blood.

Another *cachexia* is *scurvy* (scorbutus); brought on by deficiency of fresh food; especially of vegetable food.

Another is *goitre or bronchocele*, whose main feature is a swelling in the neck, involving the thyroid gland.

Chlorosis, or "green sickness," is a cachexia sometimes met with in girls or young women; the name is given because of a peculiar sallowness of complexion belonging to it.

Rickets occur tolerably often among the ill-fed poor in the cities of Europe; much more seldom in this country. Those having it are feeble from childhood, with defective development especially of the bones; which are easily broken and subject to decay.

Tuberculosis is the constitutional affection of which consumption of the lungs is the most familiar manifestation; but it often also affects the bowels, brain and other organs. *Tubercles* are the small, irregular, roundish deposits found after death in the place of healthy tissues; which, however, frequently soften, leaving cavities. *Tubercular meningitis* is the name given to an almost always fatal form of inflammation of the membranes of the brain, in children.

Scrofula is an old designation for a constitutional tendency showing itself early in life, by swelling of the glands of the neck and elsewhere, sore eyes, sore nose, running at the ears, and sometimes inflammation and decay of the bones of the limbs, or "white swelling" of the knee.

Toxæmia: Blood-Poisoning.

Blood-poisoning can never be a trifling thing. We should be in deadly danger of it every day, but that so much is arranged in our bodies not only to prevent it, but to relieve it promptly when it begins to take place. Indeed, each particle of used-up matter, which has served its purpose in any organ, becomes poisonous the moment it gets into the blood. But then, at once, the lungs, skin, kidneys, and bowels, with help also from the liver, take from the blood these dead particles, and carry them out, in the exhaled breath, perspiration, urine, and excrement.

There are several forms of blood-poisoning, due to suppression of the action of the kidneys, nonsecretion of bile by the liver, or to retention of putrefiable matter not carried off by the bowels.

Next to these may be named *septicæmia*, produced by the absorption of foul material from a surface of the body, or near it; as from a gangrenous wound or an unhealthy abscess. *Outside* poisons reach the blood through the mouth and stomach, by the lungs, or by the skin, as by *bad drinking-water*, and the microbes of malaria, small-pox, scarlet fever, yellow fever, cholera, etc.

Fever.

When one has a hot, dry skin, a glowing red cheek, thirst, a rapid pulse, and weakness of body, with more or less dulness or disturbance of the mental faculties, we say he has *fever*. Constipation of the bowels, and scanty secretion from the kidneys, also commonly belong to the same condition. But of all this group of symptoms, the most constant is *heat*. In health, a thermometer in the armpit will mark 98.5° Fahr. Fever often runs it up to 103°, 104°, 105°, or even higher still.

Fever is met with in connection with many diseases. Inflammation of any of the great organs, brain, lungs, heart, pleura, bronchial tubes, stomach, bowels, etc., will, when active, be attended by it. And, without any inflammation, we meet with it in typhus; also with inflammatory affections secondary to the general disease, in scarlet fever, small-pox, measles, diphtheria; and with or without local inflammations, in yellow fever, in relapsing, intermittent, and remittent fevers; perhaps also sometimes without any true acute inflammation, in typhoid fever.

CLASSIFICATION OF DISEASES

Various plans of arrangement have been proposed, and are in use. I prefer to name all diseases as either INFLAMMATIONS and TOXÆMIC disorders, CACHECTIC affections, NERVOUS disorders, or UNCLASSIFIABLE diseases.

Under the first head we place inflammatory attacks affecting BRAIN (meningitis*), LUNGS (pneumonia), PLEURA (pleurisy), AIR-PASSAGES (laryngitis, tracheitis, bronchitis) HEART (endocarditis, pericarditis), TONSILS (quinsy), THROAT (pharyngitis), STOMACH (gastritis), BOWELS (enteritis, colitis, dysentery), PERITONEUM (peritonitis), LIVER (hepatitis), KIDNEY (nephritis), BLADDER (cystitis), etc.

As TOXÆMIC disorders may be mentioned: 1. Those caused only by *contact* or *inoculation:* PRIMARY SYPHILIS, GONORRHŒA, HYDROPHOBIA, VACCINIA.† 2. *Eruptive*‡ diseases, which are *contagious:* SMALL-POX, CHICKEN-POX, SCARLET FEVER, MEASLES. 3. Allied affections to the above, but *not eruptive*, although contagious: MUMPS and WHOPPING-COUGH. 4. Diseases *generally epidemic or endemic:* TYPHOID FEVER, TYPHUS, SPOTTED (cerebro-spinal) FEVER, ERYSIPELAS, PUERPERAL FEVER, INFLUENZA, DIPHTHERIA, PLAGUE, and CHOLERA. 5. *Endemic* and *occasionally* epidemic; YELLOW FEVER, RELAPSING FEVER, and DENGUE. 6. Endemic and *"malarious":* INTERMITTENT, REMITTENT, and PERNICIOUS (congestive) FEVER.

Of CACHECTIC affections, a part of the long list will answer our purpose here. 1. Those which are always *chronic* (prolonged indefinitely, tedious, not tending to recover of themselves): ANÆMIA, CHLOROSIS, LEUKÆMIA, GENERAL DROPSY, TUBERCULOSIS, DIABETES, CONSTITUTIONAL SYPHILIS. 2. *Acute* or *subacute* (active, and of limited duration): SCURVY, GOUT, INFLAMMATORY RHEUMATISM, PYÆMIA, SEPTIC FEVER, (septicæmia), etc. 3. *Local* cachexiæ (degenerations): as CANCER, GOITRE, BRIGHTS' DISEASE (of the kidneys), FATTY HEART, GIN LIVER, etc. 4. SKIN-DISEASES.

NERVOUS DISORDERS may also be only in part named here: APOPLEXY, PARALYSIS (palsy), EPILEPSY, CATALEPSY, HYSTERIA, CHOREA (St. Vitus's dance), TETANUS (lock-jaw), ASTHMA, ANGINA PECTORIS, LOCOMOTOR ATAXY (one form of spine-disease), CONVULSIONS, NEURALGIA, DELIRIUM TREMENS, (mania-a-potu) Insanity.

Of UNCLASSIFIABLE diseases, not easily fitting in either of the above groups, there are DYSPEPSIA, CHOLERA MORBUS, DIARRHŒA, COLIC, JAUNDICE, HEMORRHAGES, LOCAL DROPSIES, WORMS, etc.

Signs and Symptoms of Diseases.

On approaching a sick person, our first question, whether put into words or not, is naturally, *Is there much the matter?*

Other inquiries follow, such as these: Has he *fever?* Is he very *weak?* Is his *head clear?* Does he suffer *pain* anywhere? What *organ* or *function* of his body is not as it ought to be?

So we proceed from one thing to another in forming what doctors call a diagnosis of a case. Experience makes such an examination more and more easy, rapid and efficient. A besetting temptation, even with physicians, is, when enough has been found out to give a probable *name* for the malady of the patient, to conclude at once that this is the whole matter, and that we know *all about* his case. This cannot be true, however, unless we have carefully scrutinized *all* his organs, or at least have satisfied ourselves on good evidence as to the presence or absence of disorder in them all.

Our plan here makes suitable only a short account of the principal symptoms found in connection with different parts of the body, and their meaning; or, at least, the conditions with which they are most likely to be associated.

Symptoms Affecting the Skin.

The skin is hot and dry in fever.

Moisture is nearly always a favorable sign. Exceptions are, the *cold* and *clammy* perspiration of great prostration, and the *copious* sweating of *advanced consumption.*

*Nearly always this term applies; meaning inflammation of the *membranes* of the brain as well as of its substance.

†Glanders, sometimes taken from the horse, is another of this group.

‡Physicians often call these *exanthemata.*

EMACIATION (wasting) is seen generally in those long sick. Sometimes it occurs rapidly, as in severe diarrhœa, or in the summer complaint of children.

The color of the skin may be changed considerably in disease. The face is—

PALE, during fainting, with sick stomach, and in anæmic persons.

FLUSHED, in fever, early stage of apoplexy, or intoxication.

CHEEKS BRIGHTLY FLUSHED, in hectic fever of consumptives.

PURPLE or LIVID, in typhoid or typhus fever.

YELLOW, in jaundice, bilious fever, and yellow fever.

SALLOW, in chlorosis, dyspepsia, and cancer.

BLUE, in the collapse of cholera, and cyanosis.

BLACK, almost, in suffocation from any cause.

ERUPTIONS upon the skin belong to certain other diseases.

Symptoms Presented by the Mouth, etc.

The TONGUE is pale, in anæmic persons; red in scarlet fever, inflamed mouth, and sometimes when the stomach is inflamed (*gastritis*); furred, in indigestion, and very often in fever; brown, or black, cracked and fissured, in *low* fevers, as typhoid or typhus. It is pushed out with difficulty in low fevers, and after an apoplectic attack; going to one side, in paralysis affecting one side only.

The TEETH are covered with thick brown stuff called "sordes" in low febrile states. They are loosened, sometimes, by severe salivation, from large doses of mercury—(not now given by regular physicians).

The GUMS are swollen, soft, and spongy, and disposed to bleed easily in *scurvy*. A *blue line* along the gums is observed in lead-poisoning; a *red line*, occasionally, in advancing consumption. Swelling and soreness of the gums, with tenderness of the teeth and a "coppery" taste in the mouth, are signs of mercurial *salivation*.

Increase of saliva gives the name to this affection, once not uncommon in medical practice. *Iodide of potassium*, taken medicinally, will sometimes salivate. Large doses of *jaborandi*, or its active principle, *pilocarpin*, generally does so.

The TASTE is morbid bitter in disorder of the liver; sour, often, in dyspepsia, saltish, with spitting of blood; putrid in gangrene of the lungs.

The Throat.

DIFFICULTY of SWALLOWING may result from *inflammation* of the tonsils or gullet (*pharynx*); *spasmodic* closure of the throat; permanent narrowing or *stricture* of the pharynx or lower gullet (*œsophagus*); *obstruction*, as from a bone, etc.; *paralysis*, as after diphtheria, or extreme *weakness*, in the dying state.

THIRST is excessive in two opposite conditions: high *fever* and low *collapse*.

The Stomach.

APPETITE is almost always deficient in both acute and chronic disease; most so, however, in the former, as a rule. *Perverted* appetite occurs in case of *chlorosis*, and in some *hysterical* subjects.

NAUSEA (sick stomach), with or without *vomiting*, is met with in *indigestion*, *colic*, *seasickness*, *pregnancy* (morning sickness), *gastritis* (inflammation of the stomach), *hysteria* (occasionally), *cholera-morbus*, *epidemic cholera*, *bilious remittent fever*, *yellow fever*, *ulcer of stomach*, *cancer of stomach*, *strangulated hernia* (rupture), *obstruction of the bowels*, *irritant poisoning*.

Symptoms Belonging to the Circulation.

PALPITATION, or disturbed action of the *heart*, may depend upon *inflammation* of its *membranes* (*pericarditis*, *endocarditis*), *enlargement* (*hypertrophy* or *dilatation*), *valvular disease*, *anæmia*, with weakness, *nervous irritability* (nervousness), as from strong coffee, tobacco, etc., *dyspepsia*, *brain disorder*.

A FEVER pulse is moderately rapid, and in the early stages of an attack, strong; later, soft and compressible. When violent acute *inflammation* of any organ is present, it is quickened, *hard*, and rather full, as a rule.

A NERVOUSLY-DISTURBED pulse is quick (jerking rather than rapid), and variable, under excitement or repose.

In EXTREME WEAKNESS, most of all in the dying state, the pulse is nearly always rapid and small, or "thready." A pulse of 150 or 160 in a minute, is almost always a sign of death. Very rarely is the pulse slow in the dying state.

SLOWNESS of the pulse is most marked in compression of the brain (as in *apoplexy*, *fracture of the skull*, or *hydrocephalus*, *i.e.*, water on the brain), and in *opium poisoning*. Occasionally the pulse is very slow in cases of heart disorder.

IRREGULARITY of the pulse is natural to a small number of persons, at least in childhood or in old age, without other signs of

FEELING THE PULSE

disease. It may be, otherwise, a transient symptom, particularly during convalescence from a fever. It is distinctly related to disease present, in certain cases of *heart disease* (when it is serious) and in the third stage of acute *meningitis* (inflammation of the brain). Excessive *smoking of tobacco* sometimes produces irregularity of the pulse.

A *double* pulse is met with in many instances of *continued fever*, typhus or typhoid.

Slowness of the *capillary* circulation is occasionally shown, in morbid states, by the tardy return of the blood when displaced by pressure, as on the back of the hand or the cheek. In the *veins*, likewise, this is notably seen in the *collapse of cholera*.

Hemorrhage.

While bleeding from any part of the body is often an important symptom, it needs to be interpreted with care. Its consequence depends greatly on its *quantity* and the *source* from which the blood comes.

Thus, in bleeding at the *nose*, the flow of blood may possibly result from either of the following causes: a severe *blow*; *congestion* (fullness of blood) simply in the membranes of the nose; *congestion of the brain* (to which the bleeding may give advantageous relief); early stage of *typhoid fever*; *suppressed menstruation* (monthly discharge) of which it is an *alternative*.

SPITTING of blood may come from hemorrhage of the *gums*, the back of the *nostrils*, *throat*, *windpipe* (bronchial tubes), *lungs*, or *stomach*.

If from the *stomach*, it is preceded by *nausea*, and is *vomited*. When from the *lungs* or bronchial tubes, it is *coughed up* instead.

HEMORRHAGE FROM THE LUNGS (*hæmoptysis*) may depend upon *congestion* (overfulness of blood) of the lungs; *heart disease*, *tubercular consumption*, *suppressed menstruation*, of which it may, occasionally, be an alternative or substitute; an *injury*, as a broken rib, wound of the lung, etc.; *rupture* of an *aneurism of the aorta*.

VOMITING OF BLOOD may be one of the symptoms occurring in *hysterical* women; or it may result from *ulcer*, or *cancer* of the stomach; or it may be (as above) substitutive or vicarious of absent menstruation.

UTERINE hemorrhage (other than the natural monthly flow) may come from *congestion* of the womb, or its *ulceration*, or *cancer*. During pregnancy it threatens miscarriage, or results from misplacement of the *placenta* (after-birth).

Hemorrhage from the *bowels* may be connected with *piles* (hemorrhoids), *dysentery*, *ulceration* of the bowels, *cancer*, *rupture* of an *abdominal aneurism*, *typhoid*, *malarial*, or *yellow fever*, or *vicairous menstruation*.

HÆMATURIA (bloody urine) may follow a mechanical *injury*, *inflammation* of the *kidneys*, *stone* in the bladder, or a bad state of things in cases of *scarlet fever*.

Symptoms Connected with the Breathing Organs.

Sixteen to eighteen times in a minute is the ordinary rate of breathing while at rest, in health, for a grown person. In *fever* it is

almost always a good deal faster than this; often thirty, forty, or more respirations in a minute. When a person is *poisoned with opium*, the breathing becomes *snoring*, and very slow, even only six times or less in a minute in heavy narcotism. *Apoplexy*, and pressure upon the brain from a piece of a *broken skull*, are also attended by slow, snoring respiration.

DIFFICULTY OF BREATHING may be caused by irrespirable gases (as chlorine, etc.) in the air; obstruction in the air-tubes, as from croup, asthma, or bronchitis; disease of the lungs or pleura, as in pneumonia, consumption, or pleurisy; disease of the heart or aorta; abdominal dropsy, pressing upwards.

COUGHING, also, may have a variety of causes, of the nature of which we may often judge by its character. Thus it is, commonly, dry and tight, in early bronchitis; soft, deep, and loose, in advanced bronchitis; hacking, in the beginning of consumption; deep and distressing, in advanced consumption; short and sharp, in pneumonia; hoarse and barking, in an early stage of croup; whistling, in advanced membranous croup; paroxysmal (in spells) and whooping, in whooping-cough; dry and hollow, when sympathetic or nervous.

EXPECTORATION is *white*, *thin*, and *mucous*, in catarrh and early bronchitis; *yellow* and *thick* (*purulent*) in severe and protracted bronchitis; *rusty*, in the middle stage of *pneumonia; bloody*, *thick*, and *yellow*, in developing *consumption* (phthisis); in heavy, round, small yellowish, *lumps*, in *advanced* consumption; *putrid* (rotten), in *gangrene of the lung*.

The BREATH is *hot*, during fever; *cold*, in the collapse of cholera. The odor of the breath is seldom perfectly agreeable except in a healthy child. Bad teeth and imperfect digestion are common causes of unpleasantness in it. It is very heavy at the commencement of a *fever;* sour, during an attack of *indigestion;* rotten, in gangrene of the lung.

HICCOUGH is produced by a spasm of the *diaphragm*, at the floor of the chest. It may depend upon *indigestion*, *nervous disorder*, or great *exhaustion*. In the last of these, it is generally a decidedly bad symptom.

SNORING (stertorus), respiration results from *oppression of the brain;* the cause of which may be either *apoplexy*, *fracture of the skull*, *dead drunkenness*, or *narcotism by opium*. (Of course we do not forget that some persons snore tremendously during their natural and healthy sleep.)

Symptoms Affecting the Muscles.

POSITION is often significant in disease. Inability to rise may be owing to *general weakness*, *palsy*, *inflammation of the joints*, etc.) as from *rheumatism* or *gout*), or an injury, such as a broken thigh or leg.

INABILITY TO LIE DOWN is generally the result of *difficulty of breathing* (dyspnœa), which doctors then call *orthopnœa*, or *straight-up* breathing.

In COLIC, the patient usually prefers to lie upon the breast.

In PERITONITIS, the chosen position is on the back, with the knees drawn up.

In the *early stage* of PLEURISY, the patient lies of choice on the side not affected; after *water collects* (effusion) this is reversed. When the liver is *enlarged* from disease, the right side is mostly preferred. When the heart is much disturbed in its action, the sufferer generally cannot lie on the left side. Exceptions occur in heart disease, especially of long duration.

In ANEURISM OF THE AORTA, a favorite position is sitting up and leaning over the back of a chair, or the edge of a bed.

MUSCULAR WEAKNESS may result from acute disease, as fever, or from exhaustion. Entire want of exercise weakens the muscles. When an arm or a leg has been long fastened up in splints on account of a fracture, its muscles are almost powerless upon first being taken out of their confinement.

SPASM may be of either of three kinds; *fixed*, or *tonic* spasm, as in *lock-jaw* (tetanus); *regularly jerking*, or *clonic*, as in fits or *convulsions;* an *irregularly* jerking, as in St. Vitus' dance or *chorea*. *Cramp* is a short-timed *tonic* spasm.

TREMOR (trembling) is of two kinds; *constant* trembling, as in *shaking palsy* (*paralysis agitans*), and tremor only when doing something, as in one form of disease of the brain and spinal marrow:

RIGIDITY of muscles is different from mere spasmodic contraction. It occurs in

certain severe and continued cases of *palsy* (paralysis).

JERKING of the tendons, especially at the wrists, is met with in low states of continued *fever*, typhoid or typhus.

Symptoms Connected with our Senses.

PAIN is variously interpreted, according to its place and character. It may be

ACUTE, sharp, cutting, as in pleurisy; shooting, darting, as in neuralgia; piercing (lancinating), in cancer; gnawing, tearing, in rheumatism; dull, heavy, aching, as in pneumonia; griping, twisting, in dysentery; bearing down, in second stage of labor; pulsating, in the formation of an abscess; burning, smarting, in erysipelas; stinging, nettling, in urticaria (nettle-rash); constant, or intermittent; fixed or wandering.

TENDERNESS on pressure is generally a sign of *inflammation*, although some *neuralgic* cases have it; possibly from inflammation of the sheaths of the nerves. *Tired muscles* also are often sore to the touch as well as on motion.

Sometimes pain is relieved by pressure; this is often the case with *colic*. In such instances we conclude that there is no inflammation.

Pain is not always at the place of disease. In disease of the *hip-joint*, the principal pain is at the knee; in *dyspepsia*, often, over the middle of the breast; when the *liver* is disordered, under the right shoulder-blade; in irritation of the *womb* at the top of the head.

LOSS OF SENSATION (*anæsthesia*), occurring from disease, constitutes one kind of *paralysis*. The other form is loss of power to move the limbs or parts affected. When paralysis involves one side of the body only, as the right arm and leg, or the left arm and leg, we call it *hemiplegia*. *Paraplegia* is palsy of both legs at the same time.

The Eye in Disease.

BLOOD-SHOT eyes show either inflammation of them or fulness of blood in the head, which is often present in *fevers*. If one eye only is very red, of course the trouble must be in itself. *Yellowness* of the "whites" of the eyes occurs in bilious disorder.

The eyelids are notably *prominent* in that curious and rather uncommon disorder called "exophthalmic goitre." *Prominence* or bulging of one eye only shows a probability of disease, as a tumor, behind that eye.

SINKING of the eyeballs in their sockets is seen to some extent in consumption and other wasting diseases. Sinking of one eye must result from wasting of its own substance or of the socket behind it, the former being often observed in the blind.

ROLLING of the eyes from side to side is common in great nervous restlessness of infants or young children.

SQUINTING, which is natural with some, and an acquired habit with others, becomes a serious symptom when it occurs as the result of disease of the brain.

The lustre of the eyes grows dull often a short time, perhaps a few hours, before death. *Bright* eyes are commonly noticed in advancing consumption. They may *glare* in *mania* (insanity), or, for a time, in acute *inflammation of the brain*.

Very small pupils of the eyes are seen when either they are, or the brain is, the seat of inflammation. In *opium-poisoning* the pupils are contracted, at least until very near death. They are large (dilated), commonly, in *apoplexy*, *water on the brain* (hydrocephalus), and poisoning by *prussic acid* or by *Jamestown weed* (*stramonium*) or *belladonna*.

Great shrinking from light (*photophobia*) exists in severe inflammation of the eyes, and also in acute inflammation of the brain.

SPOTS, *rings*, etc., floating before the sight (*muscæ volitantes*) show the presence of opaque particles in the interior of the eyeball (*vitreous humor*), which are not of much importance. *Fixed* dark spots are of more consequence; they often show a beginning of blindness.

The Ears.

PAIN in one of the ears, earache, may be either *inflammatory* or *neuralgic*. Other signs must be considered along with it to show which it is.

RINGING in the ears occurs from either of at least two or three causes, to distinguish between which is not always easy. Large doses of quinine, and of one or two other powerful medicines, will make many people's

ear ring or roar. Disease of the ear will often produce this symptom, even when the disease is not severe at the time. In other instances, *brain exhaustion*, or *congestion* (overfulness of blood) of the brain, may give rise to it. If it be heard only in one ear, we may be confident that the cause is in that ear itself.

DEAFNESS, or hardness of hearing, in various degrees, may proceed from cold in the head, very large doses of quinine, typhus or typhoid fever, wax accumulated in the ears, disease or injury of the ears, brain disease.

Headache.

Pain in the head may depend in different cases upon neuralgia, rheumatism, overfulness of blood (*congestion hyperæmia*); blood-poisoning (as by alcohol, opium, etc.); fever (remittent, typhoid, etc.); disease of the brain, sympathetic irritation (as with uterine disorder, etc.).

Skill as well as care may often be necessary to make out, in an actual case, to which of these a headache belongs. *Neuralgic* headache is nearly always on one side only or chiefly, and extends to the face also; it is shooting or darting, and there is with it some *tenderness on pressure*. *Rheumatism* of the scalp is usually accompanied by stiffness of the muscles that move the head and neck. Headache from *fulness of blood* or *fever* is attended by heat of the head; the pain is then apt to be throbbing in character. Pain from *disease of the brain* is generally in one spot, either fixed or in spells (periodic or paroxysmal); and some other sign of brain disease is also present with it.

Expression of the Face.

ACUTE disease is apt to alter this more than that which is chronic; but it is often changed in both. An anxious or distressed expression giving way to serenity is always a good sign, unless it be the result of *mortification* or *palsy* coming on.

GREAT ANXIETY is seen especially in organic diseases of the *heart*, and in acute disorders of the *abdomen*, as well as in *melancholy*.

TERROR belongs habitually to *delirium tremens*, also called *mania-a-potu*, or the *horrors*.

RAGE is now and then seen in insanity, and in some, not all, cases of *hydrophobia*.

INSANE persons, although not always very peculiar in countenance, have mostly an expression by which their derangement can be recognized by those accustomed to observing it.

COLLAPSE, that is, extreme prostration, as from the shock of a railroad accident, an attack of cholera, or the dying state from any cause, has its own characteristic expression, more easily understood when seen than described. Shrunken cheeks, pale or livid, with mouth drawn down at the corners, and white, glassy eyes; these with clammy coldness to the touch, gasping respiration, and a thready or absent pulse at the wrist, mark this condition.

Delirium.

This is a disorder or confusion of mind, in acute disease, not fixed for a long time like insanity, but depending upon a temporary cause. It is present in many attacks of maladies attended by fever; as severe remittent, typhus, typhoid, scarlet, or yellow fever, etc. A few persons are liable to transient delirium during almost any brief attack of illness. *Mania-a-potu*, as already said, has a characteristic delirium, in which, almost always, there is extreme terror, from imaginary enemies or dangers of some kind. Grown people are affected by delirium usually under circumstances which, in a child, would bring on convulsions.

Stupor.

COMA is the medical word for this. It is an unnaturally deep sleep, from which one cannot be roused. We meet with it chiefly in the following: Alcoholic drunkenness ("dead drunk"); opium-poisoning (narcotism); apoplexy; very low typhus fever; compression of the brain from fractured skull.

It is not always easy to say, in a particular case, which of these is present.

Intoxication is generally shown by the odor of the breath, and the general appearance of the patient, and his behavior before he became unconscious. In *opium poisoning*, the pupils of the eyes are, as a rule, strongly contracted, even when no considerable

light is shining on them. *Typhus fever* is known by the history of the case; as, in it, complete stupor is never the condition at the very beginning of the illness. A *broken skull*, if not obviously accounted for by a known injury, may be found out by careful examination of the head.

DIZZINESS (giddiness, vertigo) is accounted for in different instances by either of four causes: mere *weakness;* disorder of the *liver* (biliousness,) and *stomach;* disease of the *internal ear;* disease of the *brain*. The last of these is the least common, unless in persons over sixty years of age.

LOSS OF SPEECH (*aphasia*), or getting the wrong words instead of those intended, comes from a disorder of the brain. It is often accompanied by loss of power, especially in the right arm and leg. Loss of voice (*aphonia*) is another thing; resulting from thickening of the lining membrane of the windpipe (*larynx*), or paralysis of its muscles; or, in the dying or nearly dying state, extreme debility.

Symptoms Affecting the Secretions: The Bowels.

CONSTIPATION (tightness of the bowels; absence or rarity of movement, and smallness of amount discharged) is almost always present during the first days of a fever, of any kind except typhoid. Even in that, also, although early looseness of the bowels is more common, there is in a few cases a short time of constipation.

Pregnant women are very apt to have the bowels constipated, from the partial obstruction produced by the pressure of the enlarging uterus upon the lower bowel (*rectum*). Sea-sickness, also, is very often attended by slowness of the bowels. But the most obstinate and alarming constipation is that of *obstruction* of the bowels; as in *strangulated rupture*, or in *intussusception*.

DIARRHŒA (excessive liquid flow from the bowels) is symptomatic of various disordered conditions. It is present as a rule in *typhoid fever*, and is common in advanced pulmonary *consumption*. It is an essential part of the attack in *cholera-morbus*, *epidemic cholera*, and *cholera infantum* (summer complaint of infants). It occurs frequently by itself, particularly in warm climates, and in the summer season.

Discharges in diarrhœa are either *natural* (fecal), *mucous* (slimy), *bilious*, or *watery*. In *cholera-morbus*, which may be met with anywhere, the passages are nearly natural or bilious, unless near the end of a very bad case. *Epidemic cholera* is distinguishable partly by the *rice-water-like* abundant discharges, with no biliary color at all.

DYSENTERY is recognized by scanty but frequent *bloody* discharges, with *griping pains*, and a disposition to *bear down*. Slime (*mucus*) is apt to be mingled with blood, and at a later period in severe cases there may be pus.

Excretion of the Kidneys.

Symptoms connected with this excretion are: strangury (difficult urination), incontinence of urine (want of control, especially during sleep), retention, suppression, and excess of the secretion (*diabetes*), and unhealthy character of the urine passed.

STRANGURY sometimes follows the application of a fly (*cantharides*) blister. Now and then it is observed in children from the irritation of seat-worms in the lower bowel; and in young infants, owing to an irritating quality of the urine; which, in such a case, is pretty sure to be scanty and high colored.

NIGHTLY INCONTINENCE of urine is quite common in children, sometimes up to their "teens." Dribbling while awake shows a much greater loss of power over the bladder. This is seen in many cases of injury or serious disease of the *spinal marrow*.

RETENTION of urine may be a very distressing symptom. Men suffer it who have "stricture" of the *urethra* (outlet tube from the bladder). *Nervous disturbance* may cause it in either sex, but especially often in hysterical women. *After child-birth* it follows pressure upon the neck of the bladder. In *low fevers*, as typhus or typhoid, it results from general debility. Its probability should always be remembered in such cases, as the patient may be "out of his mind" and so may give no account of it. We should make sure, in a fever case (or, indeed, in any other illness), *how much* and *how often* water is passed. If the quantity is certainly small, it is necessary to examine the abdomen as

its lowest part, over the bladder. When urine is retained, there will be a firm swelling at the lowest part of the belly, just in front, above the bony ridge of the pelvis; and, on tapping there with a finger, a dull sound will be made. If the bladder be empty, the sound will be rather hollow.

In some cases of *spine disease*, there is retention instead of incontinence of urine. This symptom, however produced, often calls for relief by the use of a tube introduced through the urethra into the bladder, called a *catheter*. It is short and almost straight for the female; longer and curved (if of metal or firm rubber) for the male subject.

SUPPRESSION of urine is always a bad sign, in any case of disease. It is sometimes met with in low fevers, epidemic cholera, bad cases of scarlet fever, and long standing cases of disease of the kidneys. *Uræmia* (blood poisoning with materials of urine) follows it, and usually ends life in a few days at most.

EXCESS of urinary discharge is called by physicians *diabetes*. It occurs not unfrequently, for a time, after checking of perspiration by exposure to cold and with hysterical or other nervous persons.

Qualities of the Urine.

About forty, or from thirty to fifty, fluid ounces (a quart, more or less) of urine is passed by a healthy grown person every twenty-four hours. It may be retained longer in the female than in the male bladder, but not many hours commonly in either. More is passed, and more frequently, during winter than in summer.

The color of healthy urine is that of amber. It should be clear when passed, and should have very little settling at the bottom, even after standing for some hours. Yet some change in color, lighter or darker, or variations in quantity, and even deposit of sediment, may take place while the person continues in health. Such alterations often show the successful relief of the system, by excretion, of what, if not carried off, might have caused disease. *Great and continued* alterations in the urine, however, are important signs of something being wrong; and, under skilful examination, the nature of the disease may thus be found out. For this kind of inquiry the skill of the physician, trained in the use of chemical tests and the microscope, will be required.

GRAVEL is the term applied to small stony particles which are formed in the kidneys from disease, and pass, first along the *ureters* to the bladder, and thence out through the *urethra* with the flow of urine. *Pain*, sometimes very severe, may attend both of these short journeys of particles, if they be *large*. Often, they are more like *sand* than gravel, and escape without giving pain, except that both the kidneys and bladder are apt to be in a state of irritation at the time of an "attack of gravel."

STONE in the bladder is of the same nature, only the particles accumulate into one or more masses, which may become very large, and cause great suffering; not seldom, unless removed by an operation, shortening life.

GALL-STONES are formed by thickening of bile in the gall bladder, which lies under the liver, on the rightside, near the middle of the body. Although the gall-duct, through which such stones pass to the small intestine, is short, a large gall-stone (biliary calculus) sometimes gives extreme pain in its passage. Complete relief comes when it enters the small intestine (*duodenum*); as is the case likewise when a *gravel-stone* escapes from the ureter into the bladder.

Perspiration.

Besides *deficiency* and *excess* in this important secretion of the skin, it is a familiar fact that it has, in some persons, a very unpleasant odor, especially in the armpits and about the feet. Perhaps this is somewhat most manifest in the African and other tropical races, but much depends on individual constitution and cleanliness. A few persons, with all possible care of their skins, still have a considerable odor, at least in warm weather. For such it is important to bathe frequently, applying good soap and water daily to their armpits and feet; and also to keep their bowels regularly and sufficiently open.

In small-pox, typhus fever, and some other diseases, an odor peculiar to each is given off (in some cases at least) from the body.

REMEDIES AND THEIR APPLICATION

Do doctors, properly speaking, *cure* the diseases and injuries of their patients? Yes, and no. *Cure* comes from a Latin word meaning *care*; to *take care* of something or somebody. That a good physician will always do. Sometimes, also, he may and must actually *interfere* with what is going on; as when he gives an antidote for a poison, and so saves life that would otherwise be lost. But, in many other instances, he simply *takes care* of the patient, and Nature *cures*, in the full sense of that word. There is, as we are created, a tendency to get well. A bone, for example, is broken. What does the surgeon do? He draws it out straight, gets the pieces into their proper line, and puts on splints to keep them there. Then the bone knits, in a few weeks, of itself. So also with the healing of a wound. Its edges are placed and kept close together, if that can be done, till they unite again; or, if that be not possible, the wounded surface is covered with something which can do no harm, and which protects the part from outside air and other things, until it heals, of itself.

Here we see that certain conditions are wanted in each case, in order that the knitting or healing will take place. So it is with diseases, as well as with injuries. Some disorders are naturally self-limited; that is, they will, if the patient lives for a certain time, get well of themselves; they run a tolerably regular course, and then end. Scarlet fever either kills or is passing off, generally, within eight, nine, or ten days; small-pox runs its course, living or dying, within about three weeks; typhus fever, in four weeks; typhoid fever, in the same or a longer time; and so with other fevers, all of which are self-limited.

There will always be need of doctors, and of skilful, well-trained, and well-informed ones, too, however highly we may appreciate the powers of nature and the value of good nursing. It is important to be sure that by their timely and well-judged use even of simple measures, death may often be averted or long postponed; suffering may be much lessened, and recovery may be hastened from diseases which otherwise would be of very uncertain and far-off result.

Looking at remedies from our present standpoint, we may classify their *objects* as follows. Whatever their nature, they are used for one or more of the following purposes:

To relieve pain;
To compose nervous disturbance;
To promote sleep;
To open the bowels;
To check diarrhœa;
To ease vomiting or sickness of stomach;
To allay indigestion;
To improve weak digestion;
To reduce inflammation;
To lower fever;
To ease or quiet cough;
To stop hemorrhage;
To regulate menstruation;
To relieve dropsical swelling;
To support the system under prostration or exhaustion;
To increase strength in prolonged debility;
To cure certain diseases by special remedies;
To expel worms;
To antidote poisons;
To obviate the danger and suffering of accidents or injuries.

A full consideration of all the articles and procedures that are or may be used under advice of physicians for these different purposes, would make a work on "Materia Medica and Therapeutics." Our present aim will be to give a simple general view of the subject, and to dwell on such remedies as are safe and available in Home Medicine.

To Relieve Pain.

Much depends on *where* the pain is, and of *what sort*. ANNODYNES are medicines whose action is to quell pain, by their influence upon the brain or nerves. But we do not nearly always have to resort to these on account of pain, especially when it *first begins* to be felt.

To Relieve Pain.

Of all parts of the body, probably the abdomen is the most frequent seat of pain. "Stomach-ache" and "colic" are very common. The most general cause of such attacks is *indigestion*, with *flatulence* (wind in the stomach and bowels). To make the *muscular coat* of the stomach and intestines contract actively and evenly, all along their length, will, at least if done early, be pretty sure to give relief. For this purpose we give warm and gentle *stimulants* to the stomach, as essence of peppermint, essence of ginger, or some other aromatic (spicy) medicine.

But a frequent cause of irritative pain in the stomach or bowels is the presence of acid from indigestion. Against this we have what are called *antacids*, because they *neutralize* acids by combining with them. Such are *lime-water*, *soda*, and *magnesia*. Often there is great advantage, in cases of colicky pain, in adding one of these to an aromatic.

Further, the bowels are often *constipated* under the same circumstances, and this makes matters worse. It is of much importance then to *move the bowels*, by purgatives, or, as the milder ones are called, laxatives. *Magnesia* is one of these, being also, as above said, an antacid, thus having a double advantage. *Rhubarb* is another; it is combined with aromatics in *Spiced Syrup of Rhubarb*, an excellent preparation, especially for children, and as a *mixing liquid* or "vehicle" for other stronger and more unpleasant medicines. Another, often good in colic, though nasty, is *castor-oil*.

Remedy for Pain in Abdomen.

A safe and often very useful remedy for pain in the abdomen, or, indeed, anywhere else, is the outward application of a mustard-plaster. When doubtful what else to do, try that. Properly used, it can do no harm, and will most probably do good, often a great deal of good. A hot piece of flannel laid over the belly will sometimes be almost as useful as a mustard-plaster.

Colicky pain may be lessened by firm pressure on both hip bones, near their front edge. This can be done with one's own thumbs and fingers, or by those of another. The pressure should be pretty hard, though steady and not enough to hurt of itself.

Gentle pressure, and still better *kneading* the bowels, at the seat of pain from flatulence, will often help to scatter the wind and promote its moving and passing downwards, which is very important to colic.

Also, rubbing over the stomach and back with a hair-brush or clothes-brush, as briskly as can be comfortably borne, will sometimes do a wonderful amount of good for colicky pains.

If such palliative means as those just spoken of, as *aromatics*, *laxatives*, and *outward warming applications*, do not, in a reasonable time, show signs of affording relief of severe pain—we may have to obtain medical advice, or in its absence to resort to *anodynes*. Of these, the quickest and most effectual are those made from *opium*, especially *laudanum* (tincture of opium). A much weaker one is *paregoric* (camphorated tincture of opium). *Camphor* is, in the form of spirits of camphor, both an *aromatic* and an *anodyne;* in the latter quality, however, less potent, at least in ordinary doses, than opium. Both, and especially opium, require great *care* in their use. (Doses of all remedies and medicines recommended, will be found tabulated in a later part of this book).

Pain in the abdomen, however, by no means always comes from indigestion or colic. It may possibly be the beginning of *inflammation of the bowels*, or of *dysentery;* of *peritonitis;* or of *obstruction* of the bowels. It may be seated in the *liver;* in the *kidneys* (then rather in the *back*); if low down, in the *bladder;* in the female, in the *ovaries* or *womb;* or there may be an *aneurism of the aorta*, or a *cancer;* or it may be only a form of *neuralgia*. For each of these, which a good deal of knowledge may be needed to ascertain, a different kind of treatment will be called for; the pain being only one of the manifestations of disorder. Therefore any suspicion of so serious a possibility as either of these (or even *severe* or *obstinate colic*) will be a proper reason for promptly obtaining the advice of a physician.

For the relief of pain in the *side* or *chest*, a mustard-plaster is to be considered, after trial of rubbing, and simple heat (by a hot

flannel, hot flat-iron, bag of hot salt or sand, or a tin vessel filled with hot water) the first active remedy. So much here depends on the origin of the pain, that no further uniform treatment of chest or side pains can be advantageously laid down. Pain in the chest may result from *pleurisy*, *pneumonia*, *neuralgia*, *rheumatism*, *heart-diseaes*, *aneurism of the aorta*, etc., or from so secondary a cause as *dyspepsia* ("heartburn," cardialgia). Each of these requires some difference of management.

Other Seats of Pain.

Pain in the head is of several kinds, and dependent on several causes. Very seldom are *anodynes* suitable as remedies for headache, because they all act more or less powerfully on the brain, and so, may do harm. As a rule, we may say, *never* take opiates or other anodynes for *headache*, unless directly under medical advice. For "*sick headache*," which is habitual with certain persons, and then very hard to cure or even relieve, the most frequently useful remedy is a dose of *magnesia* or *aromatic spirit of ammonia*. When an aching head is hot, we are safe always in trying to cool it, by laying upon the forehead a light handkerchief wet every few minutes with cold water. A *neuralgic* headache will be more likely to be helped by application of heat to the part affected. Gentle rubbing with a pencil of *menthol*, such as is now sold by druggists, will often mitigate, if not relieve, it.

Pain in the face is likely to be ot one of three kinds: *toothache* in a decayed tooth (or more than one); *inflammation* of the jaw; or *neuralgia*. For the first, the most certain remedy is, to apply to the hollow of the aching tooth the end of a bodkin or darning-needle, around which is wrapped a little bit of cotton dipped in pure *creosote*. As this will burn the lips or gums if it touches them, care should be taken to have it overflow as littie as possible; and a glass of cold water must be at hand to rinse the drop or two away, if such does escape into the mouth. If the creosote reaches the right spot, it will quell the pain at once. *Oil of cloves*, used in the same way, is nearly as effectual; and rather less so is laudanum.

For *inflammation of the jaw*, advice had better be taken at once from a dentist or a physician. A hot poultice of flaxseed-meal, into which has been poured a teaspoonful of laudanum, may be safely applied to the painful side of the face, and covered with oiled silk (or oiled paper, or thin sheet-rubber) to prevent it from drying up and getting cold too soon.

Earache is most common in young children. A simple first remedy for it is a drop of *warm sweet oil* poured from a bottle or a teaspoon into the ear. If that fail to relieve, a drop, (or in a child two or three years old, two drops) of *laudanum* may follow it.

Pain in the joints is usually called *rheumatic;* although this word is not always definitely used. When there is no swelling, or heat (signs of inflammation), *warm applications* are likely to do good. For the pain of the joints in *inflammatory rheumatism*, the most relieving thing is *laudanum;* laying on the joint a bit of rag, doubled and wet with laudanum, and binding over it a piece of oiled silk. It will not do to put laudanum in this way over too many parts at once; as some of it is absorbed, a large amount of it might *narcotize* the patient.

Neuralgic pain in any part of the body is generally but one symptom of a general condition, depending on a predisposition of the *nervous system* and (in most, not all cases) *poverty of the blood*.

The former, being constitutional, is to be attended to by all the ways we have of favoring the general improvement of health and strength. Poverty of blood is treated also by good nourishing food and *iron*. For the immediate relief of attacks of neuralgia, many things are helpful, while nothing is certain in every case; except that, if driven to it by great suffering or exhaustion from pain, anodynes (as opium, or morphia, or some of their preparations) will stupefy sufficiently to "drown" the agony.

Temporary weakness often brings on attacks of neuralgic pain in those disposed to have them. Such persons should never wait too long for a meal. Likewise, hot food, as a cup of hot milk, or cocoa, or beef-tea, at the very beginning of the attack, may stop its progress.

Heat applied to the painful part will frequently do good; any convenient mode of application will answer. On some parts of the body a *mustard-plaster* is just the thing. *Sunshine* will (as I have seen) cure some attacks. On the other hand, I have read of ice applications having the same effect; but I have never witnessed its trial. The Japanese remedy, *menthol*, or *oil of peppermint*, is conveniently applicable in the form of rounded sticks, made by the druggists by mixing it with spermaceti. One of these may be gently rubbed over the painful part for a few moments at a time.

Various powerful anodynes are sometimes advised by physicians to be put upon, or *hypodermically injected* near the seat of severe and obstinate neuralgic pain. As in the case of *rheumatic joints* a rag soaked in *laudanum*, laid on the part and covered with oiled silk (or oiled paper) will often stupefy the nerves of the part so as to quell the pain. Anodyne *liniments* are often used with advantage. I may mention one which is moderate in strength and safe (applied outside only): mix *one drachm* of *chloral hydrate* with *four fluidounces* of *soap liniment*. This is to be gently rubbed in, for a few minutes at a time, over the part affected with pain.

PAIN AT TIME OF MENSTRUATION (*dysmenorrhœa*) is habitual with some women, and occasional with others. For its prevention, those liable to it should keep quiet for a couple of days before the expected time, and then for another day or two. When the pain has commenced, the proper position is lying down. Warmth, not excessive, but enough for entire comfort, is also needful. Hot drinks, such as *ginger tea*, or hot water with a little *essence of ginger* in it, or a teaspoonful of *compound spirits of lavender*, will be suitable. So will *spirits of camphor*, or *camphor water*, and, in bad cases, *paregoric*, or even (carefully) *laudanum*. Clothes wrung out of hot water may be applied to the lower part of the abdomen. Very severe suffering of this kind may, in rare cases, call for injection of laudanum into the bowels.

PILES (small lumps at or near the *anus*, *i.e.* outlet from the lower bowel) are sometimes very painful, especially at or after the time of movement of the bowels. Constipation should be avoided, as far as possible, by those who are troubled with piles, and yet purging actively will not agree with them. *Rhubarb* is the best laxative in such cases; or sulphur, *not* magnesia.

Inflamed piles may be soothed, if much heated, by application of very cold water. Yet, contradictory as it seems, warm, or moderately hot water, will give still more comfort in some cases. A flaxseed poultice into which a teaspoonful of *laudanum* has been poured will be suitable when the patient is in bed with a bad attack. An ointment, as cold cream (of the apothecary), should be frequently applied. It is well to know that an attack of pain and soreness in piles (which are often present without giving much trouble) may be many times prevented by the early and free anointing of the parts with cold cream, tallow, or lard.

STRANGURY (pain in passing water) is to be treated by the warm bath, or hip-bath (sitting-bath), followed by an application over the bladder, or between the thighs, of cloths wrung out of hot water. Also, taking *camphor water* and *flaxseed tea* containing a little sweet spirits of nitre, as a drink. Severe cases may justify an injection of laudanum into the bowels, or the placing in the lower bowel of a *suppository* of opium.

Under the name of anodynes (pain relievers) several other drugs are named in medical books. We need only *mention* here hydrate of chloral, belladonna, cocaine, hyoscyamus, stramonium, cannabis indica, and chloroform. Every one knows, also, what a boon to those who have to undergo surgical or dental operations is the *breathing* (inhalation) of anæsthetics, as ether, nitrous oxide, and chloroform. These are called by that name because they *annul sensation*, for the time. For extracting teeth, pure nitrous oxide is the best; for larger operations, ether is much safer, though less convenient, than chloroform. The use of ether, in this way, requires much skill, judgment, and care.

Composing Nervous Disturbance.

What this requires depends very greatly on the cause and nature of the trouble. For infants, as well as older persons, nervous

disturbance may vary all the way from slight fidgeting to fits or *convulsions*. Mild medicines for moderate degrees of, for example, "hysterical" nervousness, are *assafœtida*, *camphor*, *valerian*, and *Hoffman's Anodyne*. Physicians often prescribe also, *bromide of potassium* (or of sodium), *musk*, and others.

CONVULSIONS are very much more common in children than in grown people; and most so of all at teething time. They are least dangerous during infancy, but are always alarming. What is to be done between times to prevent or ward them off, is an important and often difficult question for even the physician to answer.

When a child "has a fit," lay it upon a bed, loosening all its clothing, especially about its neck. Have good fresh air in the room, but also sufficient warmth. Make two mustard-plasters, one for the stomach and one for the back. Get a warm (almost hot) bath ready. If the plasters are prepared first, put them on; if the bath first, let them wait, and place the child in the warm water at once. In the last case, also pour gently cold water over the head while the child is held laid in the bath.

The mustard-plasters (whether first or second in time) are only to stay on long enough to *redden*, *not blister*, the skin. This should be ascertained by looking under the plaster every few minutes. A very little while will be enough to redden and burn a child's skin if the plaster is strong of mustard. But it will be better for it to have, for an infant, only one-third part of mustard, the rest flour or Indian meal.

After the bath, have prepared a mixture of soap and hot water, and into a teacupful of this put a dessertspoonful of milk of assafœtida (if at hand) and a teaspoonful of castor or olive oil. Let this be thrown into the bowels with an injecting syringe; a towel being then held for a little while against the fundament to prevent the injection from escaping at the moment.

Adult men and women rarely (although they do sometimes) have convulsions, except those which are either hysterical, puerperal, or epileptic. The principles of management of *hysterical* and *epileptic* convulsions, during the attack, are essentially the same as for that of infantile convulsions. Treatment *between* attacks is a more difficult affair—to be conducted by those who are skilled in medicine. *Puerperal* convulsions (that is, occurring during labor, or after child-birth) are more peculiar, and ought always to have immediate attendance from a physician. Few cases of illness are more serious and critical than these; not only in appearance, but in reality.

Promotion of Sleep.

When sleeplessness comes as one of the symptoms of a disease, it may not have to be dealt with by itself, at least with medicine, unless it be more prolonged and distressing than usual. In every case quietness is indispensable, through the evening and night. Little or no light should, during the night, reach the eyes of the patient: if accustomed to darkness, this will be best.

If difficulty of sleeping (*insomnia*) result from nervous disturbance, exhaustion, overstudy or anxiety, *management* should always be perseveringly tried before resorting to drugs so powerful as the sleep-producers (*hypnotics*, *narcotics*.)

Very light, easily digested food should, under such circumstances, make the last meal of the day. Yet a person not strong will sometimes be kept awake by having an empty stomach late at night. A cracker, a drink of sugared water, or a small wineglassful of beef-tea, may then make a better night. No excitement of the brain, as by reading or continued conversation, should be allowed for two hours before usual sleeping time. Being read aloud to, if the book be not too interesting, answers in some cases; but an objection to it is that it requires the presence of more light than is desirable.

Mothers and nurses often sing their babies to sleep. That is a very good expedient, and may now and then succeed even with a grown person.

Exercise, in moderation, and in proportion to one's strength, may be very well taken in the evening to promote sleep. A walk in the open air will do, or a few minutes' flourishing of not too heavy dumbbells. Getting a little tired makes one

sleep; while real *exhaustion* has the contrary effect.

Some people imagine that if they cannot get asleep at once, they might as well be up and doing something, reading or writing, or walking about. This is a very great mistake. If not sound asleep, or even far enough towards that to entirely lose consciousness, we may yet get a good deal of rest in partial sleep; and the more of this we get the better, in the saving and renewal of strength. Keep still, then, in the dark, with closed eyes, and try to dismiss active thought. Count 100, 200, 300; repeat doggerel verses, as wrong as you can misremember them; watch imaginary sheep jumping over fancied stiles, one, two, three, four, and on, to twenty-five or fifty. Fight your eyelids; after a while, the brain-vibrations, like those of a bell that has been struck, will lull by degrees, and sleep may come at last.

Hardly without a doctor's advice, if that can be procured, ought any one to take strong sleep-compelling doses, such as *hydrate of chloral*, *laudanum*, or *solution of morphia*. *Lactucarium*, which is obtained from the garden lettuce, used for salad, is much milder than opium; and camphor water will, when mere nervous restlessness is the matter, often compose so as to allow of sleep. *Hoffmann's Anodyne* is similar in its effect, and *tincture of hops*, or a tea made of hops, is very quieting. Even a *hop-pillow*, made by sprinkling hop-leaves with alcohol and binding them in a pillow-case, will sometimes bring the tossing head to rest.

Purgative Medicines.

A large number of drugs act upon the bowels; cathartics is a technical name for these. Only a few of them need to be considered in connection with our present plan.

Rhubarb is adapted to a greater variety of cases than any other medicine for the simple purpose of relieving constipation. *Simple syrup of rhubarb* is very good for this use with babies. Younger yet, however (under a year), *sweet oil* (olive oil) is mildest of all, unless it be *manna* or *glycerine*. *Fluid extract of senna*, with one drop of *oil of aniseed* or *oil of fennel* in a teaspoonful of it, is also a good infantile laxative. *Castor oil* comes next, when a more active purge is wanted; or, when there is sourness of stomach, *magnesia*.

At any age, *magnesia* is the best antacid laxative. *Castor oil* is to be preferred when *colic* or *irritation of the bowels* is present. [Give it in twice as much *spiced syrup of rhubarb*, well mixed up.]

Saline purgatives are useful generally at an early time of attacks of sickness with fever. Take *citrate of magnesium* or *Tarrant's Aperient*. *Seidlitz* powders are of similar cooling effect; and the same is true of *Rochelle salt* and *cream of tartar*. *Pullna* and *Hunyadi mineral waters* please the taste of some.

At the beginning of acute attacks of disease with fever, the use of some purgative medicine, especially of the saline kind, *is very serviceable and important*. This is true, as a rule, of *measles*, *scarlet fever*, *whooping-cough*, *small-pox*, and *varioloid;* and, with more discrimination of cases and moderation in doses, also of *diphtheria* and *typhus fever*. *Typhoid* fever has *diarrhœa* as an early symptom generally. If, in it, the bowels are exceptionally costive, only a *teaspoonful* of *castor oil* had better be ventured upon to relieve the bowels. In measles the bowels sometimes incline to be too free; but this should not prevent our making sure of their *full* movement during the first two or three days. When, after that, they become too loose, a weakening excess of purging may be checked by suitable means, such as will be presently mentioned.

For *habitual costiveness*, either chewing at bedtime a small piece of Turkey *rhubarb root* (as big as a pea), or taking at that time a *rhubarb pill*, will be the best thing to begin with. If that fails, take another piece, or another pill, also before breakfast.

Compound rhubarb pills are stronger; they will, with most people, *purge* rather actively. *Compound cathartic pills*, of the United States list, are too strong to use except when a *very decided purgation* is needed.

Often, when the mildest and least disturbing way of emptying the lower bowel is required, an enema (injection into the bowels) will be the best. For this, a simple and generally satisfactory mixture will be made by dissolving a thumb-sized piece of

Castile soap in warm (almost hot) water, and stirring into this a tablespoonful of molasses, a tablespoonful of table salt, and a tablespoonful of olive or lard oil, or a dessertspoonful of castor oil. There are different kinds of injecting arrangements. With the most convenient, a person can (unless ill) wait upon himself. If too sick for this, or if only the old-fashioned straight syringe can be had, its point should be greased with lard, and then, the patient lying (best on one side) on a bed, it can be *very gently* introduced into the opening to the bowel to the distance of an inch or so, and gradually the liquid may be forced through the syringe.

SUPPOSITORIES are sometimes yet more convenient, and are least disturbing of all; but they are not so sure to take effect, and their action does not extend far upward. A suppository is a small soft mass, preprared for the purpose; rounded, about as large as the last joint of a woman's little finger. Common *brown soap*, cut into such a size and shape, and dipped in castor oil, or lard, may be so used. All that is to be done is to push it well into the anus (outlet of the bowel), and let it stay there.

After either a suppository or an enema has been introduced, the patient ought to try to retain it for some minutes, for effective operation.

To Check Diarrhœa.

Not every looseness of the bowels ought to be stopped at once by medicine. Sometimes it is a *relief* to a condition of the system which would involve a worse illness if it did not come.

Infants, especially, need to have the bowels moved two or three times daily; most of all while they are *teething*. We do not call it diarrhœa in them unless there are at least four or five *large liquid* passages in twenty-four hours. Of course when it is excessive it must be attended to, or weakness and exhaustion will follow.

CORRECTIVES, generally, should be the first things given in babies' diarrhœa. Sourness of stomach is commonly present with it; therefore *lime-water* being antacid, is particularly suitable. Another good corrective is *spiced syrup of rhubarb*. On account of the spices in it, this article does not purge like simple syrup of rhubarb; it only promotes an even, regular action of the muscular coat of the bowels, and so tends to get things right again.

Soda (*sodium bicarbonate*) is an antacid corrective, stronger in this effect than lime-water; but less astringent or binding.

Cinnamon water is a gentle astringent; so is *camphor water*. These do well to come next after lime-water or soda and spiced rhubarb, if the complaint is not corrected by them. Should it still be obstinate, more potent checking medicines will be needful. Of these, *paregoric* and *laudanum* have much power; but they must be used very cautiously, on account of their containing opium.

Of the many *astringent* medicines employed by physicians, under whose advice, when it can be had, they had better be taken, we may mention here, as possibly wanted in home practice, *chalk mixture* and *tincture of catechu*. A desperate and exhausting diarrhœa, which resists all such treatment as has now been spoken of, may call for the use of a *laudanum and starch enema*. This is introduced with a *small* syringe, even for a grown person; the object being to have it *stay* in the bowel; just the opposite of what we want from a *purgative* injection. A syringe holding an ounce will do for this purpose for an adult; half an ounce for a child. Two or three drops of laudanum, with starch, made not too thick to run, will be the infantile dose for such an enema (even less for a babe under a year old); thirty or forty drops of laudanum, with less than an ounce of starch, for a grown person,

DYSENTERY differs from diarrhœa, in having many small and bloody passages, with *straining* or *bearing down*, as well as pain. (Sometimes there is abdominal pain with or before each passage in diarrhœa.)

Sick Stomach.

As this occurs under a variety of circumstances, the main treatment of every case must depend upon its nature and cause. We may name, however, several remedies which will do good in most cases of nausea or vomiting, and which, therefore, it will be safe to use while awaiting medical advice.

ICE is one of these. It may be taken into the mouth in small pieces, and melted before swallowing. This is helpful in nine out of ten instances of sick stomach, and in the tenth case will do no harm.

LIME-WATER is beneficial in most of such cases; when nourishment is needed. it may be given in equal parts with milk, from a teaspoonful to a tablespoonful of each.

EFFERVESCING WATERS (mineral-water, soda-water, Apollinaris, etc.), made cool with ice, very often assist in relieving nausea. When sea-sick, iced mineral-water will be likely to help more than anything else.

When *weakness* is present, teaspoonful doses of brandy or (the best) whiskey may be appropriate. The smallness of the dose is here especially important, and it need not often be repeated more than three or four times, at intervals of half an hour or so, unless great exhaustion is impending. Very seldom ought anything alcoholic to be ventured upon as a remedy without the express advice of a medical authority. *Children's* doses, of such and of all strong medicines should be very small *Ten drops* of brandy or whiskey will be enough at a time (if needed at all) for a child of two or three years, where a teaspoonful would be given to a grown or nearly grown person.

AROMATIC SPIRIT OF AMMONIA is reviving to one who is faint with sickness of stomach. It is antacid as well as stimulant.

SODA (bicarbonate of sodium) is antacid, but not stimulant. It is generally very comfortable to a disturbed stomach.

WARMING stomachic doses for nausea are *ginger*, *cloves*, *cinnamon*, and other aromatics (spicy articles) in small doses. Large draughts of ginger, hoarhound, chamomile, or boneset tea, or even of clove or cinnamon infusion, will bring on vomiting. This is an instructive example of the opposite effects, often produced by the same thing, in small and in large doses.

Sometimes, with constipation, or even, especially in summer, with commencing diarrhœa, small doses of magnesia are composing to the stomach. The same is true of very small doses of calomel ($\frac{1}{12}$ to $\frac{1}{4}$ of a grain), which, however, belongs to the physician's rather than to the home list of medicines. Still, out in the country, where advice cannot always be had in time, a family medicine-chest may very well have in it, among other things only for *posssible* or *occasional* use, a small box or package of $\frac{1}{12}$-*grain calomel-powders*. They may be serviceable particularly at an early stage of *summer complaint* in children.

PAREGORIC is the only other medicine needing here to be mentioned among those likely to assist in quieting a nauseated stomach.

OUTSIDE, an early remedy for vomiting may, in any case, safely be, a mustard-plaster over the pit of the stomach. For a young child, a spice-plaster will, for this purpose, be preferable; made by mixing together one or two teaspoonfuls each of several spices—as ginger, cloves, and cinnamon, or half as much red pepper, with a similar amount of wheat or Indian flour; wetting these with whiskey, and spreading them on a piece of muslin or thin flannel. This, when laid over the stomach, should be covered with a piece of oiled silk or oiled paper or rubber-cloth, to retain its moisture for a longer time.

Indigestion.

A much overloaded stomach is best relieved by being made to throw out its contents under the action of an emetic. This is, however, a harsh remedy, not nowadays often resorted to.

Ordinary indigestion requires, for one thing, to give the stomach rest. Let no food be taken for a number of hours; if the patient is strong enough, not for a whole day. Make sure that the bowels are open; to carry off the refuse of undigested or half-digested food.

If the stomach is still unsettled, the aids to nature which we may resort to are those just above-mentioned, as suitable for cases of nausea and vomiting. Small and few doses, however, are likely to be necessary for common attacks of indigestion. If, with these, there are *dizziness*, *headache*, a *yellow tongue or eyes*, and a bitter taste in the morning on awaking—a set of symptoms designated usually as *biliousness*—small doses of the old-fashioned blue pill may be reasonably and safely given.

Practically speaking, of blue pill, a small dose for indigestion, with signs of participation by the liver, will be *one grain* at night, and again the next morning; and perhaps again the second night. Compound gentian pills may be taken for two or three days, if entire relief does not come sooner. This is the prescription:

Take of blue mass, five grains; powder of rhubarb root, and extract of gentian, each twenty grains; oil of cloves, four drops. Mix these together, and divide the whole into twenty pills. One or two should be taken at once.

When there is lingering indigestion, after an attack, with some flatulence, the bowels not being sufficiently free, yet not requiring a strong purge, two of the above pills may be taken, twice daily, for two or three days; not longer at one time, on account of their containing a small amount of mercury.

Continued Weak Digestion.

The class of medicines which particularly *tone up* a weak and relaxed stomach are the simple vegetable bitters. Such are *quassia*, *columbo*, *gentian*, and some others. *Simple* bitters we call these, because they have no other very positive quality except the bitter taste, and no marked effect upon the human system except as tonics to the stomach. (In *large* draughts their infusions or "teas" will act as *emetics*.)

There are some bitters which have other very important actions. Quinia is one, got from Peruvian bark; it acts powerfully on the nervous system, and is the special remedy for malarial fevers. The same bark contains also cinchonia, and several other more or less bitter tonic and *nervine* "alkaloids," as the chemists name them.

Nux Vomica is a very powerful bitter nervine tonic. Out of it is obtained strychnia, one of the deadliest of poisons, but also one of the most valuable of medicines, when used with judgment, care, and skill. With this information, we may venture to add that the *tincture of nux vomica*, in ten-drop doses, twice or thrice daily, is one of the most effective of all the stomachic bitters, in cases of continued weakness of digestion, with flatulence.

These bitters generally improve the appetite, which is almost always poor when the stomach is otherwise weak. For the same end, as appetizers, mineral acids are useful; dilute *aromatic sulphuric* acid, for example, under the common name of *elixir of vitriol*, and *chlorohydric* acid, formerly, and sometimes now, called *hydrocholoric*, or muriatic acid. *Nitromuriatic* acid adds a special tendency to act upon the liver. One or other of these acids, and most of all the last named, is often given to the subjects of prolonged indigestion, along with the vegetable bitters.

To Reduce Inflammation.

A serious task, this is, in many instances; taxing the doctor's skill, and not very rarely baffling him. How, then, can one say anything about it in a work on Home Medicine? A few clear principles seem to be all that can be here spoken of, referring the reader for a larger discussion of the subject to treatises designed for the medical profession.

Inflammation (as already said in that part of this book which dealt with the nature of diseases) may affect any organ or portion of the living body. When it attacks one of the more *important* organs, or even extensively involves the skin, life may be endangered by it. If only a small part, as an eye, ear, hand, or foot, is inflamed, there is usually much less danger, though there may be a great deal of suffering. Moreover, an inflammation may *spread*, as from the ear or the eye to the brain; or some poisonous (septic) matter may be formed in the inflamed part, and by *blood-poisoning* (*septicæmia*), the whole body may suffer and perhaps die. Septicæmia is very often fatal, but a vast multitude of people have inflamed hands, feet, eyes, noses, jaws, etc., without either it or the allied disorder, pyæmia. The liability to such accidents of inflammation is greatest where the atmosphere of the place is foul.

Taking a broad general view of inflammations as a class of disorders, it may be said that they have *three stages*, or progressive changes.

First comes excitement. Towards the centre of the inflamed part, the arterial

blood-vessels beat and throb; being roused to endeavor, so to speak, to overcome the obstruction there. Heat, redness, swelling, and pain, all belong to this stage.

Then follows exudation. This is the forcing of some of the fluid portion of the blood (often with some of the *white corpuscles;* occasionally also a number of the *red corpuscles*) out, under the pressure of the excitement and resistance together, through the walls of the vessels, into the substance of the part. If this fluid is thin, it may collect as a "serous effusion;" such as is frequently the result of pleurisy. When thick and adhesive, it glues parts together (*plastic lymph*); this happens in the pleura, in the peritoneum, in the pericardium, and in the membranes of the brain. If, again, there are many white corpuscles in it, and the vitality of the part is disturbed much, *pus* is formed; we have suppuration; with either an *abscess*, or, at once, a yellowish or greenish prudent discharge (as in severe *bronchitis*).

This is one way in which the three stages of inflammation may follow one another. But, differently from this, there may be the first stage of excitement, and the second, of exudation (effusion), with, for a third, instead of suppuration, gangrene, or *mortification*.

More frequently we have inflammatory excitement, and moderate or small exudation, followed by resolution; that is, the inflammatory process ceases, without either suppuration or gangrene; and the part and the patient get well.

Now, what can be done by *treatment* against the going on of inflammation to its worst (gangrene), or the next worst (suppuration), or the third in seriousness (liquid effusion)?

We can attack it in the first stage of excitement, with, in many cases, very good effect. This is what we mean by *reducing* inflammation; moderating the violence of the conflict between the surrounding throbbing blood-vessels and the obstructed centre, so that the least possible damage shall be done by it.

Means Used in Reducing Inflammatoin.

For this purpose, the means available in different cases are, chiefly, these:

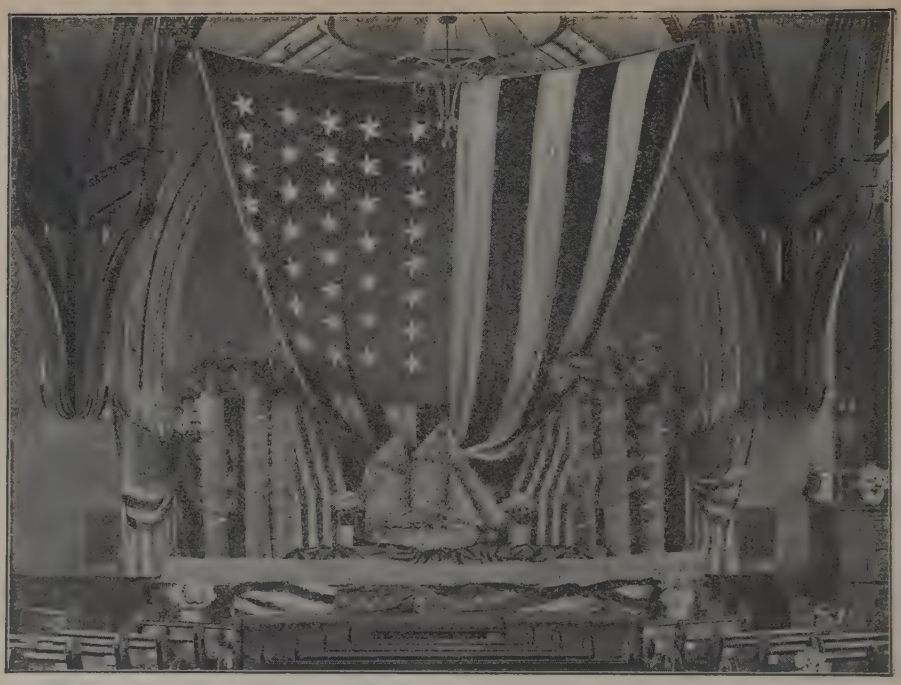
Rest; Position; Cold; Diet; Purgation; Blood-letting; Cooling Medicines; Nervous Sedatives; Counter-irritation.

REST of the part is indispensable in all inflammations. When the part is small, and is not used in moving about, the body need not be absolutely confined. If it be otherwise, as when an ankle is inflamed from a severe sprain, and still more when a lung, or the pleura, or a bowel, is so affected, the rest must be complete, in bed. Carrying a sore hand in a sling rests it; covering an inflamed eye with adhesive plaster closing the lids, or remaining in a darkened room, gives it repose. But any one with an inflamed lung must be kept as still as possible; and must not even speak, unless in a whisper. If the brain be inflamed, quietness and almost darkness will be necessary, to avoid mental as well as bodily disturbance.

POSITION can be made to help when a hand or a foot is inflamed. By keeping the part raised, the tendency of blood towards it will be lessened advantageously.

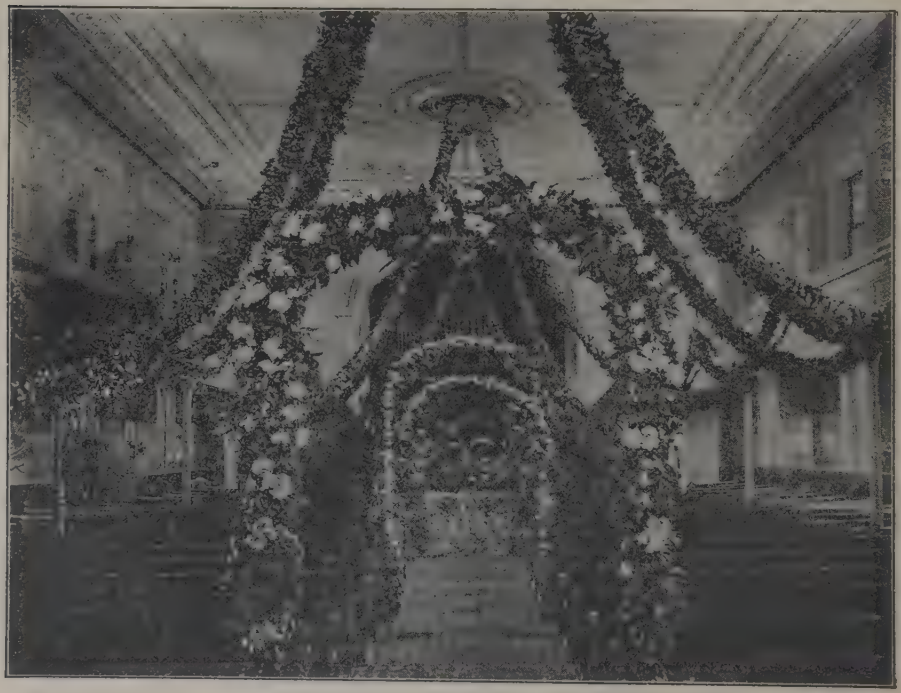
COLD is often a powerful *antiphlogistic*, as old writers called whatever tends to reduce inflammation. It must, however, be steadily applied, to have this effect. *Dashing* cold water on a part and then leaving it, in a place not itself freezing cold, will from reaction, make it warmer than before. When the brain is inflamed, a good plan is to shave the head, or at least cut the hair very short, and keep it half covered with light rags soaked in ice-water. For steadiness of effect, the rags must be dipped in the cold water every few minutes. A more effectual method—more convenient, however, for the abdomen than for the head—is to lay over the inflamed part a coil of light rubber tubing, through which cold water is made to pass. This is done by placing one end of the tube in a vessel of water somewhat higher than the body, and allowing the water to pass out at the other end, which is placed lower.

DIET was formerly much relied upon, and low diet was made very low—almost to starvation. We know now, that inflammation is possible in feeble as well as in strong bodies. Not every one can bear doing long without food, or even with too



PATRIOTIC DECORATIONS

Decorations used to instil patriotism are the most commendable of the many public occasions.—Children's Days, Commencements and national holidays are the most popular. Flags and bunting, banks of daisies, a "Ship of State" and floral columns are seen in this illustration.



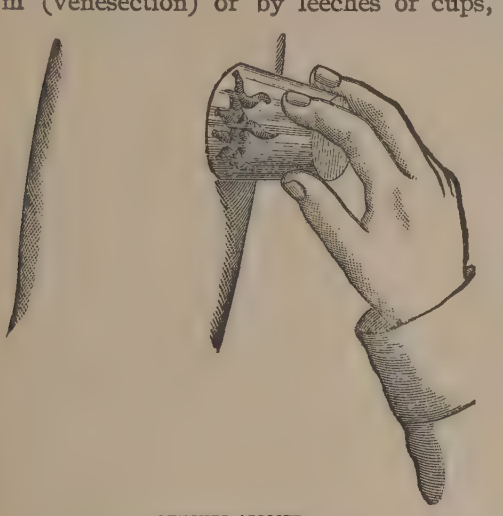
DECORATIONS FOR A WEDDING

This is an interesting view of elaborate designs, in arches and festoons. The green and white in the arches and in the pulpit decorations are easily procured and arranged.

little food. Also, strength is necessary to shake off disease, so to speak. It is not strength, but excitement, that we want to reduce. A really low, thin diet, therefore, is only suitable for a strong person, and in no case for many days together, during illness. It is important, however, when *fever* is present, with which the power of *digestion* is always weak, to give food in a simple, liquid form, so as to cause the stomach no trouble in appropriating it.

PURGING MEDICINES act like an unstimulating diet, in cooling the blood, and thus promoting a quieter action of the heart and arteries. This favors the reduction of the excitement which attends a violent inflammation of any part. The cathartics which have the most effect of this kind are the *Salines*, as Epsom salts, Rochelle salt, citrate of magnesium, cream of tartar, etc.

TAKING BLOOD, either from a vein in the arm (venesection) or by leeches or cups,



LEECHES APPLIED.

from an inflamed part (local blood-letting), is a very ancient remedy. Once overmuch used, the reaction in our time has gone quite too far against it. It is a very valuable means of reducing inflammation.

Cooling or Sedative Medicines.

COOLING (sedative) medicines are in place chiefly in inflammatory affections of the breathing organs, as pneumonia, bronchitis, and pleurisy. *Tartar emetic* is the most powerful of these. Once it was very largely used. Its harsh action upon the stomach and bowels has caused it to be now given mostly in very small doses; from the one-sixteenth to the one-fourth of a grain only, for adults, at an early stage of a violent inflammation attended by fever. Tartar emetic is not suitable to be used as a domestic medicine.

Ipecacuanha resembles it in its disposition to bring on vomiting, but is very much milder and safer. Ipecacuanha is a very proper article for family use, under many circumstances.

Nitrate of Potassium is a sedative, cooling medicine, not now very largely used by physicians. *Digitalis* was once considered a sedative; now it is called a *tonic* to the heart. *Ergot* has great popularity in the medical profession at the present time, in the treatment of subacute inflammatory troubles, particularly of the spinal marrow. None of these last—nitrate of potassium, digitalis, or ergot—can be advantageously used without medical advice.

The nerve-centres have much influence over the movements of the blood, and some nervous sedatives are important in their secondary effects upon inflammation.

Aconite is one of these. It is a strong poison in any but very small doses, and must be used only with the greatest care. *Tincture* of *aconite* is the common preparation. Its dose is from half a drop to one or two drops, in water, every one, two, or three hours. Some physicians of experience give it in almost all cases of inflammation of the lungs, pleura, etc., even in children. If it is kept in the family medicine-chest, it should be distinctly marked poison.

Opium has obtained a very large place in the treatment of one dangerous inflammation, that of the peritoneum (*peritonitis*), which lines the whole interior of the abdomen. Opium tends to constipate the bowels, and powerfully affects the brain. It also tends to diminish secretion in the air-passages, and therefore it does not appear to be suitable, at least at an early stage, in inflammation of the bowels, brain, or lungs, or in *acute bronchitis*. After the *excitement* has subsided, in *dysentery* and in *bronchitis*, perhaps sometimes in *pneumonia*, it may aid in

allaying pain and checking excessive discharges.

COUNTER-IRRITATION is a term which explains itself. Endeavor is made to draw blood and nervous excitement from an inflamed part by a harmless irritation or inflammation somewhere else. *Blisters* are strong means of this kind. A blister is raised by leaving on the skin for a time a plaster made of ointment of cantharides; or painting the part with cantharidal collodion, and covering it, while moist, with a piece of oiled silk. With a child, an hour or two will generally be enough to allow the cantharides (Spanish fly) to act. In a grown person, it may require three, four, or more hours. There should always be a piece of gauze between the skin and the blistering plaster, so that it can be entirely removed at the proper time. When it is taken off, the scarf-skin (cuticle) being raised in watery swellings, these may be pricked with a point of any kind, to let the water out. Then there should be placed over the sore surface a piece of muslin or lint thickly spread with simple cerate, to heal it up in two or three days.

The time for blistering (which is only called for in rather bad attacks of internal inflammation) is not at the beginning of the case, but after the excitement of the circulation has ceased. The disorders, in the course of which, at such a stage, a blister is most likely to do good, are *inflammation of the brain*, *pneumonia*, *pleurisy* and *membranous croup*.

Other modes of counter-irritation are, painting the skin with *tincture of iodine;* rubbing over a small surface a drop or two of *croton oil;* or a little *tartar emetic ointment.*

Painting with iodine is a milder measure than blistering with cantharides; and it may be resorted to in a greater number of cases, of moderate violence. Croton oil and tartar emetic ointment are only employed in *obstinate chronic* cases of irritation of internal organs. They produce very sore, pimply, or pustular eruptions.*

* If either of these should be used, great care must be taken not to get the oil or ointment into any one's eyes. A patient of mine nearly blinded himself by neglecting this precaution; putting his fingers to his eyes just after rubbing croton oil upon a part of the skin.

Fever.

Reminding the reader of what was said, a few pages back, of the nature and signs of fever, it may be said now, that what we want to do when those signs (*heat*, *excitement* of the *circulation*, *locking up of secretions*, and *weakness*) are present, is, first, and chiefly, to ascertain and remove, if possible, the cause of the attack. We should also try to lessen the heat, promote the return of the secretions, and support the system through its period of weakness.

To diminish heat, cold water is the great remedy. Almost incredible it seems, that physicians were once afraid to give cold drinks to patients suffering with raging fever. A man with small-pox, two hundred years ago, was shut up in a close room, with red curtains hanging about his bed, blankets piled on him to promote perspiration, and, for the same end, only hot and bitter drinks, herb teas, were allowed him! All the world knows better now, and follows nature's pointing better than that. *Thirst* is an almost universal symptom of fever; and frequent draughts of cold water are its best remedy. Ice-water is not the best, at least if the draughts craved and taken are large; it may be, to the most advantage, of about the temperature of deep well-water; about 50° to 52° Fahr.; although nearer the freezing-point will answer well. If the stomach is very irritable, as is often the case in autumnal remittent and in yellow fever, small lumps of ice melted in the mouth and then swallowed, at short intervals, will do better than drinking much water at a time.

Cold water outside is a remedy naturally thought of; and it may be used, but carefully. *Sudden chilling* is not safe. Some physicians, especially in Germany, now treat cases of typhoid fever by immersing the patient for ten minutes at a time in a really cold bath. This seems to me not a plan to be approved. But the sponging of the face, arms, hands, and, part after part, the whole body, with cold or cool water, two or three times a day, is an admirable means of relief in fevers generally. Its service is perhaps most marked in scarlet fever, when the surface of the body is often intensely hot; the whole skin seems to be

inflamed. Bear in mind the great principle: we want to temper, to moderate the excessive heat; not to chill the body below its normal degree.

Certain additions to water as a drink will contribute to its refrigerant action. *Acids* have this tendency. *Lemonade* and the juice of *oranges* are generally suitable. *Citrate of potassium* and *acetate of ammonium* are the medicines most sure to be safe and beneficial for the same purpose; the former when the bowels are natural or constipated, the latter when there is a disposition towards diarrhœa.

Of the secretions, those of the bowels, skin, and kidneys require attention in fever, In most cases of *typhoid* fever and some cases of *measles*, the bowels incline to looseness from the start. When, in those diseases, they are not moved at all during the first day of the fever, a small dose of a mild purgative may be given; in typhoid fever, a teaspoonful of castor oil; in measles, a teaspoonful of citrate of magnesium (solid), or a half-wineglassful of effervescing solution of citrate of magnesium; or a teaspoonful of Rochelle salt.

These are exceptional febrile diseases. In *remittent* (autumnal, bilious, malarial) fever, a good brisk purging early in the attack with a saline medicine, such as citrate of magnesium (an even tablespoonful, solid, or a wineglassful of the solution, repeated in six hours if it does not operate) or Rochelle salt (a tablespoonful), will be pretty sure to be useful. *Typhus* fever requires caution, in expectation of great weakness; half of the above doses will be best for its treatment. *Scarlet* fever should be, as a rule, the occasion for a good cooling saline dose on the day the attack breaks out.

Purgatives help to clear out from the bowels and from the blood impurities which, while they remain, are poisonous to the system. But real *purgation* belongs in fevers, as a part of the treatment, only to the early stage. After that, we need merely to see that the bowels are not constipated; a daily moderate movement will suffice. Some persons suppose that because a sick person takes only small quantities of food, he does not need to have his bowels open at all. But the waste of the substance of the body is going on even faster than during health, and the discharge from the bowels comes from this waste as well as from the refuse or excess of food.

Fever: Dryness of Skin.

Dryness of the skin is a regular symptom of fever. The most frequent exception to it is in the febrile state of *inflammatory rheumatism;* in which the skin, while hot, is sometimes quite moist. Generally, the dryer the skin, the worse; the coming of moisture shows the subsidence of the fever. The high heat and dryness are connected together. Reduce the temperature, and perspiration will break out. Therefore, the cold drinks and (careful) cold washing and sponging, spoken of as appropriate to lower the excessive temperature, will serve also to restore the secretion from the skin. Citrate of potassium, acetate of ammonium, and some other medicines favor this effect.

Diuretics are agents which tend to increase the action of the kidneys, the flow of urine. They are among the more uncertain remedies; they do not always act as we wish them to. In this they differ very much from purgative medicines.

The *salines* already mentioned (citrate of potassium and acetate of ammonium) are useful as *diuretics*. So are cream of tartar and sweet spirit of nitre. The latter is very often given in fever, when the amount of urine is small. Do not forget that sometimes, in low fevers, the bladder is full, but the patient cannot empty it. This must be examined into. If there is *retention* of urine, it must be drawn off with a *catheter*.

Fever: Diet and Treatment.

Weakness, in fever, is not quite the same thing early in the attack as towards its end. In the first place it is an oppression of the system; after a while there is more or less exhaustion. The first is best relieved by the means above referred to. At that stage, with persons of average strength, the amount of food taken may be small and its character light. (Persons always feeble will need to have concentrated food from the beginning.) As the attack goes on, even towards the end of the first week usually, and in scarlet fever and small-pox

sooner, the system loses strength, and support is necessary. What shall the means of that support be?

Liquid, strong food in small quantities and often is the rule. Milk (with lime-water in it if the stomach be very weak) and beef tea are the things to stand by. Strong mutton broth and chicken soup (with all fat fully skimmed off) will do for variation.

Supporting treatment for great debility has always, with physicians, included the use of something alcoholic, wine and whiskey being mostly preferred. Opinion in the medical profession on this subject has tended of late years (in the minds at least, of its safest leaders) towards a lessening of the amount of alcoholic stimulation in fevers, and towards resorting to it in fewer cases. Once it was almost a universal practice to give whiskey in all cases of typhoid, as well as of typhus, fever. Now, many cases of typhoid fever are found to get through well without it.

On such an important matter, in every actual case, the judgment of a physician should be obtained. The safest rule in home management of the sick will be (unless in extraordinary emergencies) not to give or take alcohol in any form unless advised by a competent physician.

Cough.

How many different kinds and cases of cough there are, we have already mentioned when considering it among the symptoms of disease. It cannot be treated exactly alike under all these different circumstances. As a symptom it is unpleasant, and often wearisome; and it is well to know of some domestic remedies which are safe and useful in many cases.

First, a dry cough must be softened and loosened. The three best home remedies for this purpose are ipecacuanha, squills, and wild cherry bark. Of the syrup of ipecacuanha, for this effect (not to cause vomiting) the dose is from a quarter to a half teaspoonful. Of syrup of squills, which does best at a later stage than ipecac, half a teaspoonful to a teaspoonful. Of syrup of wild cherry bark, a teaspoonful. This last may be given along with syrup of ipecac at first, and with syrup of squills afterward.

There is also real usefulness in the soothing effect upon cough of licorice, and of pure and well-made *candies;* hoarhound candy for example. The advantage of these is that a little of either can be taken very often, so as to keep up a nearly constant influence of the kind desired. Although such things only touch the swallowing part of the throat (*pharynx*), not the wind-pipe (*larynx*), yet the nearness and sympathy of these two surfaces cause the extension of the effect from one to the other. Spencer's *chloramine* pastilles are useful in this way.

After loosening, a wearisome cough may need to be quieted. This must be done with care, since to stop secretion and dry up a cough will make things worse. Opium and its preparations, including of course morphia, have the most power of this kind. They are often added to cough-mixtures, to be used after free expectoration of phlegm has come on. Wistar's cough lozenges, when made after the regular formula, are composed chiefly of licorice, with a little opium added. Syrup of lactucarium, also, is quieting to cough, and is a milder narcotic than opium. It may be used sooner and with less apprehension of excessive effect. Compound tincture of benzoin often has a very good effect, in fifteen to twenty drop doses, each dose taken on a lump of sugar.

Hemorrhage.

What causes bleeding must always be the first question. If it is a symptom of a disease, the necessity of treating the disease rather than the bleeding is plain. In such a case, only a large and weakening hemorrhage calls for special measures on its account. This is true of the bleeding at the nose in the first week of typhoid fever, *spitting of blood* in consumption of the lungs, *vomiting* of blood in ulcer of the stomach, and bleeding from hemorrhoids or *piles*. It is well to state clearly that there are no remedies which are always certain to stop bleeding from any internal cavity of the body.

NOSE-BLEEDING.—Often this is rather relieving than otherwise, in full-blooded young people, who without it would have had headache. The occasion for stopping it comes when it is so large in amount, or continues so long as to weaken by loss of blood

How shall we stop it? Tell the patient to avoid blowing his nose. *Clotting* (coagulation) is the natural way of stoppage of all hemorrhages. Bathe the forehead and outside of the nose and cheeks with cold water, or apply *ice* to the forehead (not too long at once, but enough to cause the impression of decided cold); or, if this does not suffice, to the back of the neck.

Put a plug of cotton well into the nostril from which the blood comes. If first dipped lightly in a strong solution of alum, it will be more effectual. Let the person keep quiet, with the head and shoulders raised. Holding both hands high above the head is said to help to stop bleeding at the nose.

Only one in a very large number of cases will be really dangerous. When all the above measures fail, a physician will be needed, who will effectually plug the bleeding nostril. For this a watch-spring arrangement is sometimes used, or an elastic catheter. If the latter, a string (waxed ligature) is put through the hole at the end of the instrument, and that is oiled and very gently passed back into the nostril until it can be felt at the opening above the throat. With forceps (nippers) one end of the string is then seized and brought out of the mouth. A piece of cotton is tied upon it, and then the catheter and the other end of the string are drawn out of the nose, and the cotton plug is held firmly against the back of the nostril. If still necessary, another plug may be again inserted in the front of the nostril.

Bleeding in the Mouth.

When a tooth has been pulled, or in an infant, the gums have been freely lanced, sometimes considerable bleeding will occur. If from a tooth, a plug of cotton may be dipped in *creosote*, or *tincture of chloride of iron*, and pressed into the bleeding cavity with the end of a bodkin or darning-needle. *Ice* may be applied to too freely bleeding gums, or they may have put against them a soft rag with *alum-water* or a *solution* of *tincture of chloride of iron*.

Spitting of Blood.

Is it from the *lungs*, or from the *throat*, *mouth*, *or nostrils*?

Not unfrequently, bleeding from the nose goes backwards, into the throat, and the blood, then hawked up, is naturally imagined to come from the lungs, sometimes causing great alarm. Inquiry and examination will make it clear whether this, or bleeding from the mouth, is the case.

Ulcerated throats sometimes bleed. The ulcer can then be seen, in a good light, if the tongue is pressed down with the handle of a tablespoon. This sort of bleeding, however, is not at all common.

When *vomiting* occurs before blood appears, we ascribe it to the stomach. The blood is then, usually, rather dark and thick; not fresh-looking.

If real *bleeding from the lungs* takes place, the blood is coughed up (perhaps quite softly and lightly); it is, as a rule, bright red. Only a little may come; sometimes merely streaking the expectoration; or it may be copious; mouthfuls all at once. In this last case, it is attended by danger of exhaustion from the loss of blood.

No unprofessional person should think of taking charge of a serious hemorrhage without the aid of a physician, if one can be had. While waiting for one, however, what ought to be done?

Put the patient upon a bed, with the head and shoulders comfortably raised with pillows. He must keep very still and not speak. Let a piece of ice be taken into his mouth every few minutes, and swallowed slowly. Then fasten around each arm, above the elbow, a shawl-strap, if such be at hand, or a long handkerchief, quite tightly; leaving each on, however, only a few minutes at a time. If the bleeding does not stop, let them be tightened again and again, several times. Should this not succeed, and the doctor has not yet arrived, similar straps or bandages may be applied in the same manner to the lower limbs, just below the knees.

If blood comes from the *stomach*, it may be from *ulceration*, or *cancer*; or it may be *hysterical* (that is, connected with general nervous disorder), or, in exceptional cases, may take the place of menstruation which is suppressed. (*Bursting* of an *aneruism of the aorta* is a possible source of hemorrhage, either from the stomach or from the lungs:

but the existence of such an aneurism will mostly have been before discovered by an attending physician).

To moderate or check large bleeding from the stomach, as shown by free vomiting of blood, ice is the safest and most hopeful of remedies. Keeping quiet, and taking the least possible food in the liquid state, are important. Boiled milk with lime-water will be the most suitable nourishment; or arrow-root, tapioca, etc. In the absence of medical advice, no medicine had better be ventured upon; unless it be swallowing very small amounts of solution of alum, or, once in two or three hours, a single drop of creosote, dissolved in two tablespoonfuls of water.

Intestinal Bleeding.

For hemorrhage from the *bowels*, the same kind of management is applicable as that appropriate when blood is thrown up from the stomach; as just described.

Bleeding piles (hemorrhoids) are, of course, troublesome, but the bleeding, as such, does not nearly always require treatment. If it continues very freely, the patient must lie still in bed, with a piece of oil-cloth or rubber-cloth under the lower sheet. A piece of sponge or a napkin dipped in ice-water may be held against the fundament. If anything else is to be done, it ought to be upon a physician's advice.

Monthly Irregularities.

For delayed monthly courses it is desirable to produce a determination of blood towards the lower part of the abdomen. Hot foot-baths, and warm hip- or sitting-baths, are the most effective means for this end. Opening the bowels rather briskly with a Lady Webster's or a compound rhubarb pill, or Warner's cordial, or tincture of aloes and myrrh, will also be helpful towards it. Especial care must be taken that the body, and most of all the feet, shall not be chilled at such a time.

Permanganate of potassium is a good promoter of regularity in menstruation. Two grains may be the dose, twice daily. If it seems to agree with the patient, it may be continued through a month or two, discontinuing at the time of the monthly return, when that takes place.

For painful menstruation (*dysmenorrhœa*), lying still is very important from the beginning of the attack. Warm flannels may be applied to the abdomen. A hot drink is likely to be comfortable, such as this: Put into half a teacupful of hot water, a teaspoonful of Warner's cordial, a teaspoonful of compound spirit of lavender, and twenty drops of spirits of camphor; stir them well together just before taking it. Should relief not come in an hour or so, paregoric—a teaspoonful at once—may be given. Few cases will need any stronger anodyne; and they should be under the care of a physician.

Menorrhagia is excessive menstrual flow; a variety of *hemorrhage*. The most important part of its management is usually during the intervals, to prevent it. Near the expected time the sufferer, who has reason to fear it, should lie still in bed. When the excessive flow comes, cold wet cloths may be laid upon the abdomen, the rest of the body being kept comfortably warm. Only a decidedly bad case will fail to be thus moderated.

Dropsy.

For our purpose, in this place, it may be said that there are three classes of dropsical troubles: general dropsy (*anasarca*), superficial local dropsy (*œedema*), and local internal dropsies. After scarlet fever, the kind most likely to come is *anasarca*, general dropsy. From great weakness and thinness of the blood there often comes *œdema*, or local watery swelling, of the *feet*. Heart-disease, liver-disease, or kidney-disease will often bring on general dropsy; but, not infrequently, liver-disease will be attended by abdominal dropsy almost alone. Chest dropsy is another local internal form: and *water in the head* another.

For the cure of any of these, the great thing is to find the cause, and remedy it, if possible. Dropsy is often, though of course not always, one of the last results of disease, which itself may have continued for weeks, months, or years. The best hope of its being cured is in those cases in which there is not much else the matter, and when it has not lasted long.

For dropsy as a symptom, when it is right to treat that, physicians give *diuretics* and *purgatives*. Of the first may be named cream of tartar, juniper berries, and squills. Cream of tartar (bitartrate of potassium) acts also moderately on the bowels. Another purgative used in this way is jalap, frequently given with cream of tartar. More active is what is called the drastic cathartic, *elaterium;* which, even in very small dose, will purge severely. All these medicines, indeed the whole treatment of dropsy, ought to come under the judgment of a skilful physician. Such an one, when unsuccessful (as may happen) in reducing dropsy by diuretics and purgatives, may conclude it best to tap the patient; that is, to let out the water by introducing a small tube into the swollen part. This gives immense relief, sometimes permanent. In a certain number of instances the fluid accumulates again, and the operation may have to be repeated. Tapping the *abdomen* has long been an approved practice; doing the same for effusion in the *chest*, after *pleurisy*, has latterly been found suitable in a considerable number of instances; and even water around the *heart* (pericardial effusion) has been so relieved in some cases within a few years.

Another relieving operation sometimes performed for great watery swelling of the legs and feet is to lance the skin in a good many places, so as to make the water ooze out gradually. When this is done, the parts should afterwards be greased with cold cream or tallow, to prevent inflammation, which might become erysipelatous and troublesome.

Prostration: Debility.

We have seen already that there is more than one kind of weakness from disease. There may be *oppression*, as in the early stage of almost any acute disorder; or *depression* (prostration) from a great shock, such as a railroad accident, crushing a limb, or from the lowering influence of typhus or typhoid fever; or *exhaustion*, such as will be produced by a large hemorrhage, an attack of cholera morbus, or a severe disease of some length of continuance.

For *oppression*, in a person of good constitution and strength, unloading the system is needed—by sweating, purging, and action of the kidneys.

For *depression*, support is called for. Experience indicates that alcoholic stimulation is, in sudden or great prostration from any cause, the most effectual. It may enable the system to tide over the time of weakness and danger, so that all will go on well again; whereas, without it, the patient may sink and die.

Alcoholic stimulation is very often abused. It is employed when there is no occasion for it, and when required it is frequently too great in amount. Every little feeling of weakness does not properly call for a glass of wine or whiskey; far from it. Fainting is better treated by fresh air, as much as possible; dashing or sprinkling with cold water on the face, and ammonia. *Smelling salts* (carbonate of ammonium) put, for a moment at a time, under the nostrils, will hasten recovery from a faint. When swallowing is possible, twenty or thirty drops of the *aromatic spirit of ammonia* may be taken in a wineglassful of water.

But when a person is almost dead from loss of blood, or an extensive burn, or the shock of a railroad accident, with white lips, shrunken cheeks, cold skin, and rapid, thready pulse, we need to stimulate with alcohol, but not too much. A *teaspoonful* of whiskey will be enough, in many instances, repeated in ten or fifteen minutes, if the patient does not show reaction. A *tablespoonful* will be a large enough dose at one draught in any case. More will do no better towards stimulation, and the after effect will be worse. Always, moreover, such stimulation must be withheld as soon as the depression has passed away, and then the less alcohol he has had put into his system the better.

General Debility.

After an acute disease with fever—as scarlet fever, measles, typhoid fever, etc.—*convalescence* is accompanied by more or less debility. But when everything goes well, appetite is then strong, and the losses of the system are made up by the appropriation of food. A person who was healthy before such an attack will commonly need no help from medicines to "build up" again.

Running down in strength, however, with or without acute disease, and often without any fixed disorder of any great organ, is not uncommon, from various causes. Too severe, monotonous, and long-continued labor, out of proportion to one's strength; worry, particularly when it prevents refreshing sleep; living in a close air, without change and exercise; these are some of the conditions in which people are apt to get down "below par" in strength.

Poverty of blood (*anæmia*) is generally present in such cases. So is *loss of appetite* and digestive power; and *nervous depression*. These are the three elements of ordinary continued debility.

Treatment for Debility.

To meet these, we have, besides rest from care, change of air, and generous feeding (all of which are of the greatest importance), three sorts of tonics: *blood-renewers*, *appetizers*, and *nervines*. Of the first class, referring to works on Materia Medica for others, the most valuable, in the generality of cases, are iron and cod-liver oil. To the second class belong the *vegetable bitters*, as *gentian*, *quassia*, *columbo*, *chamomile*, etc.; and the *mineral acids*, as *aromatic sulphuric acid* (elixir of vitroil), and others. Under the third head may be named quinine as most largely and safely applicable to general debility. Physicians also use, in some selected cases, *strychnia* and *phosphorus*, as powerful nervine tonics; but they are too dangerous to allow in the family medicine chest for use without medical advice. One preparation, if labelled *poison*, and kept out of the way of the children and of ignorant servants, may sometimes find safe use as a tonic both to the digestive organs and to the nervous system; *tincture of nux vomica*; safe in the small dose of ten drops twice or thrice daily.

Remedies for Special Diseases.

We have very few real and certian *specifics* for the cure of particular diseases. The great boast of the medical profession is of its power to stop "chills and fever" and control other kinds of malarial attacks with quinine, and with some other preparations from the same source, namely, the Peruvian Bark. *Syphilis* is, undoubtedly, curable in the large majority of cases, timely attended to, by the skilful use of two remedies, mercury (various preparations) and iodide of

TUBERCULOUS LUNG.

potassium. *Itch* is always conquerable by a sufficient application of sulphur, in ointment or otherwise.

Scurvy is curable, without much aid from medicines (tonics if any) by *fresh vegetable food*; as potatoes, onions, oranges, lemons, etc. *Inflammatory rheumatism* is beneficially influenced by salicylic acid and alkalies (potassa, soda, lithia); as gout has been long known to be by colchicum.

Besides antidotes for actual *poisons*, and medicines which kill or drive out *worms* from the bowels, we cannot claim any other clear examples of special remedies for particular diseases. It used to be said that *iodine* is a certain cure for *goitre* (enlargement of the thyroid gland in the neck). It is no doubt generally serviceable in that affection; but it will not always cure it. Quinine does not always cure ague. It "breaks" the chills, but in one, two, or three weeks they may come again; and the cure then has to be finished by a month or two of a course of *iron*.

There has not yet been discovered any specific remedy for scarlet fever, measles, whooping-cough, small-pox, typhoid or typhus fever, yellow fever, or cholera. All these diseases must be, therefore, conducted through the attack as safely as possible; meeting the symptoms as they occur, with the most reasonable measures we know of.

PRINCIPAL MEDICINES AND OTHER REMEDIES

For the reader's convenience, we will now give a brief account of the principal medicine in general use likely to be particularly mentioned in the following, pages. As they are ahlphabetically arranged, there will be no difficulty in finding any one of them for reference.

Acetate of Ammonium Solution.—This is a mild, moderately cooling medicine, very suitable to promote perspiration during fever. It is easily made by dropping small pieces of *Carbonate of Ammonium* into good *Vinegar*, piece after piece, until it ceases to bubble with effervescence. (This proceeds from the Carbonic Acid gas passing off, being displaced by the Acetic Acid of the Vinegar.

Dose of this Solution, a Tablespoonful every two or three hours. It is preferred to other sweating medicines especially in *typhoid* and *typhus* fevers; *low* fevers, so-called. It does not act upon the bowels.

Aconite.—Tincture of the Root of the Monkshood or Aconite plant. A deadly sedative poison in any but very small doses. It acts mainly on the nervous system, but indirectly on the circulation. Some physicians use it in many cases of *inflammatory fever*, as in that of pneumonia, pleurisy, etc. *Dose*, one or two drops, in water, for a grown person, every two, three, or four hours. A bottle containing it should be labelled Poison.

Aloes.—A powerful purgative medicine, having a particular tendency to act on the *lower* bowel. Therefore it is not a suitable cathartic in cases of *Piles*. Yet, in a very small, not purgative, dose, it is sometimes added to other medicines for the relief of piles. Its action on the lower bowel makes it more appropriate when *delay* of the femirine *monthly flow* is treated by laxative medicines. The *Tincture of Aloes and Myrrh* (Elixir Proprietatis) has been much employed for this end. *Dose* of *Aloes*, from one or two to ten or more grains. *Dose* of *Tincture of Aloes and Myrrh*, from one to three or four teaspoonfuls, in water.

Alum.—A mineral called a *salt* by chemists. It contains either *Ammonium* or *Potassium* with *Aluminium* and *Sulpuric acid* in combination. (There is also an *Iron* Alum, in which, likewise, Ammonium is present.) It is crystalline, and has a peculiar taste, easily recognized after making its acquaintance. Alum is not often given as a medicine for the stomach, except as an emetic in *bad* cases of *croup*. For that purpose, its *dose*, in powder, is half a teaspoonful, with the same amount of the powder, or a teaspoonful of Syrup of Ipecacuanha. In small dose, it is an astringent; that is, it tends to make the tissues which it touches shrink or contract together. Thus it helps to lessen the swelling of the mucous membrane, which is inflamed in *sore throat*, and it is much used for that, either in *powder* or in solution as a gargle. The powder may be *blown* into the throat through a quill, or, sometimes, *put* on the sore place with the end of one's finger. A *gargle* is made by dissolving a piece as large as a thumb in half a tumblerful of water. It is used by taking a mouthful of it and throwing the head back *without swallowing it*, letting it go as far down into the throat as it can without being swallowed.

Alum should not be employed in *mouth*-washes, because, when left long in contact with the teeth, the Sulphuric Acid in it acts somewhat upon their enamel. A solution of alum in pure water makes a good astringent eye-water, for inflammation of the eyes an even teaspoonful of alum in a tumblerful of water will be strong enough.

Ammonia.—*Volatile Alkali* and *Hartshorn* are other names for this substance. When pure, it is a gas; but it is used either in the form of the Solid Carbonate of Ammonium, or in solution in Water (*Aqua Ammoniæ*), or in Alcohol. Smelling salts consist usually of the Carbonate. Druggists keep a stronger and a weaker watery solution of Ammonia. The medicinal form most used is the *Aromatic Spirit of Ammonia* (a solution in Alcohol, with Spices). This is a stimulant and antacid preparation. Its *dose* is from ten to twenty-five or thirty drops, in water. *Aqua Ammoniæ* (Water of Ammonia) is used to make *Volatile Liniment*, by mixing it with an equal quantity of Olive or Lard Oil. This liniment is a

very warming thing to rub into the skin of the throat for a sore throat, as a counter-irritant.

Arnica.—The *tincture* of the flowers (or of the whole plant) is a popular application for bruises and sprains. It is a warming application, and not suitable where the skin is broken. Being poisonous when swallowed in large doses, it should be kept so labelled, and so used as to prevent mistakes with it.

Arsenic.—A metal whose compounds are poisonous. The medical form in which arsenic is generally prescribed by physicians is the solution of arsenite of potassium (Fowler's solution). *Dose*, from three to ten drops, twice daily: often given for chronic diseases of the skin. It should never be taken by an unprofessional person, without medical advice.

Assafœtida.—A gum-resin, of very disagreeable odor and taste; a good, mild, and safe composing medicine for disturbed nerves and to induce sleep. Assafœtida pills, of three grains each, may be given now and then to hysterical people. The drug is also good for *flatulence*. *Milk* of assafœtida is a very serviceable medicine for *babies' colic*. *Dose*, a teaspoonful, sweetened.

Bark, Peruvian. See quinine.

Baths.—In treatment of disease, the kinds of baths most used are the warm and the hot bath. We may call it warm from 90° to 96° Fahr., and hot from 96° to 100°. It never need be hotter than this last figure.

Warm baths are very often useful, for relaxing and tranquillizing the system. In *croup*, *convulsions*, and *lockjaw*, as examples, such effects are often well obtained.

Hot Baths though less frequently called for, are sometimes very serviceable; especially in cold and low states of the system. Chronic rheumatism is one of the affections likely to be benefited by it.

Hot Dry Air Baths (Russian bath) are occasionally advised by physicians, in obstinate prolonged skin affections, etc.

Vapor or Steam Baths are occasionally used for the application of heat and moisture to the body. They are not safe beyond the temperature of 110°, or possibly, for a short time, 120°. Moisture conveys heat to the body much more rapidly than dry air at the same temperature. A steam bath may be given, by the patient being stripped of clothing, and seated in a chair, wrapped, chair and all, in a blanket; his head only projecting above the latter. Then vapor may be generated by dropping very hot bricks into a pail of water placed between his feet. As above said, care must be taken about the temperature; and, on the whole, it will be hardly best to resort to a vapor bath without the advice of a physician.

Medicated Baths.—Hot and warm springs, as those of Virginia, are medicated by the sulphurous and other contents of the waters. Sometimes they do much good (bathing in the waters) for chronic troubles of the liver, kidneys, etc., and rheumatic joints.

Belladonna.—This product of the *deadly nightshade* (*atropa belladonna*) is a powerful narcotic or brain stimulant drug. The *extract* of the leaves is most used by physicians as a medicine, in neuralgia, etc. *Atropia*, a very strong alkaloid principle, is obtained from the root. Its solution is often dropped into the eyes by oculists, for the examination and treatment of affections of the eyes. It enlarges or dilates the pupils, giving them a more brilliant appearance. Ladies are said to take it sometimes before going into company, to make their eyes "brighter;" whence the name, from *bella donna*, *fair lady*.

Dose of the solid extract, a quarter of a grain to a grain; of the tincture, ten to fifteen drops. *Solution of atropia* for the eyes, two to four grains to a fluidounce of water. Neither should be used without medical advice.

Benzoin.—A resinous substance, from the *styrax*, an East Indian tree. The compound tincture of Benzoin is a good medicine for bronchial cough. Dose, fifteen to twenty drops, on a lump of sugar, every three or four hours; or at the beginning of a spell of coughing. The same tincture, applied with a camel's-hair pencil, is very healing to a *sore nipple* or a *cracked lip*, or even a *fissure of the anus*.

Bismuth Subnitrate.—A soothing stomachic medicine. Dose, two to five grains.

Blackberry Root.—Country people generally know the astringent property of this;

but some make a mistake in supposing the *berries* to have the same; which they do not. A tea made by cutting up a handful of the root and soaking it for two or three hours in boiling water (kept hot) will answer a good purpose in checking diarrhœa, in tablespoonful doses.

Blisters.—We use *mustard-plasters* not to blister, but only strongly to warm and stimulate the skin. For raising a blister, *cantharides* is mostly resorted to. The oldest way is to spread the *ointment of cantharides* on a piece of buckskin, three or four or five inches square; cover this with a piece of gauze, and lay it on the part. This will draw a blister upon a grown person in four, five, or six hours; with a child, in two hours or less. Then nip (do not remove) the raised scarfskin with the point of a pair of scissors, and lay upon it a soft muslin rag thickly spread with simple cerate, as a healing dressing.

CANTHARIS VITTATA

CANTHARIS VESICATORIA.

Once in a while *strangury* (difficulty in passing water) will follow the application of a blister, from some of the cantharides being absorbed into the blood, and so getting through the kidneys into the bladder. Flannel wrung out of hot water applied to the *bladder* and *perineum* (crotch, just between the thighs at the pelvis); spirits of camphor, taken in twenty-drop doses; and, if the difficulty lingers, a laudanum injection into the bowels, are remedies for strangury.

Blue Pill, or blue mass. This is a preparation of mercury, one-third of the strength of calomel. It is a soft solid, easily made into pills. Apothecaries usually keep on hand three-grain blue pills.

The best established usefulness of blue mass is in the relief of what is called "biliousness," when there is a bitter taste in the mouth, especially on awaking in the morning; with some degree of nausea (sick feeling at the stomach), and more or less yellowness of the tongue and of the whites of the eyes; perhaps of the face or the skin generally; the bowels also being constipated, or the stools slate-colored instead of brown or yellowish-brown, as is natural. One or two grains of blue pill at bedtime, and the same again in the morning or the next evening, taking in all from two to four grains, will do well, without any risk of salivation, at least in all but one case or so in a thousand.

Calomel is better for a similar purpose as a baby's medicine. Indigestion and commencing diarrhœa in infants are often much helped by small doses of calomel; powders, each of which contains one-twelfth of a grain of the medicine, with a grain or two of soda (sodium bicarbonate) or magnesia, or only sugar; the last for taste, and to give substance to the small dose of the drug.

Borax.—A very familiar article this is, in the nursery, for *sore mouth*. It is a mineral astringent, milder than alum, and may be used more freely; either dissolved in water as a wash, or in powder with sugar, put with the finger right on the sore spot in the mouth.

Bromides: Potassium, Sodium and **Lithium.** These "bromides" are nervous sedatives; tranquillizing an excited brain in a different way from opium; having less sleep-compelling power than it. Bromide of potassium is largely prescribed by physicians for epilepsy and some less serious but obstinate troubles of the nervous system. Bromide of sodium has the same sort of effect, but perhaps is more agreeable to the stomach; and the same is true of bromide of lithium. Bromide of ammonium is less often used for similar effects. *Bromo-caffeine* often helps nervous headaches.

Dose, of either, five to fifteen or twenty grains, in water. The largest doses are best borne when taken at bedtime. Long use of large doses of either of the bromides sometimes causes an eruption on the skin, and some other unpleasant symptoms, called *bromism*, by physicians. For any one who suffers greatly from the sting of a bee, or other insect, twenty-grain doses of bromide of potassium may be advised.

Cajuput Oil.—An aromatic greenish (or, when old, reddish) oil, from the leaves of

an East Indian tree; one of the best remedies for *flatulent colic*, especially when "gouty;" and also for *flying gout* and *chronic rheumatism*.

Dose, from four to ten drops, on a lump of sugar, followed by a drink of water.

Calomel.—Chloride of mercury. See above, under blue pill. Calomel is a white powder. *Dose*, from one-twelfth of a grain, for an infant, to one-half grain, one grain, or sometimes possibly more, for an adult. *Not to be used as a domestic medicine;* unless, after experience, the very small calomel powders, for indigestion of infants.

Camphor.—A most useful gum, from evergreen tree native to the south and east of Asia. Everyone knows its white or colorless transparency, its peculiar odor, and pungent and yet cooling taste. It is volatile; that is, if left in the air it will slowly go off in vapor. Very little of it will dissolve in water. *Camphor-water* is a very mild preparation. *Spirit of camphor*, made with alcohol, is much stronger. Camphor is a composing medicine to the nerves; somewhat more stimulant than assafœtida. In very large doses it is narcotic.

Camphor-water is an excellent tranquillizer for restless babies; being also, like the spices, warming to the stomach, and somewhat anodyne, it is excellent in colic. *Spirit of Camphor* is best when an anodyne effect is specially needed; as in colic of grown people.

Dose of Camphor-water, from a teaspoonful (an infant dose) to a tablespoonful. Of *Spirit of Camphor*, from ten to thirty drops; on sugar, and stirred in water, or in a thick syrup, as spiced syrup of rhubarb. When dropped into water, the alcohol unites with the water and "throws down" the camphor in little white flakes.

Paregoric is a camphorated tincture of opium.

Carbolic Acid.—This has no proper place as a domestic medicine. It has had great popularity as a disinfectant; more than it deserves, in comparison with several other less unpleasant things. Surgeons often employ it in "antiseptic" dressings and lotions,

Cardamon Seeds, *Compound Tincture of.*—A warming aromatic preparation, often added to soda, etc., for sickness of the stomach. *Dose*, a teaspoonful, in water.

Castor-Oil.—Expressed from the beans of the *palma christi*, a handsome plant, originally from Asia. It is nasty, decidedly; but is a good, effective, and yet mild purgative medicine. It is the best cathartic, even for babies, when any *irritation of the bowels* is present; as in threatening of dysentery, and in some cases of colic.

Dose, from a teaspoonful to a tablespoonful. The best way to give it is to stir it well with twice the quantity of *spiced syrup of rhubarb*. So mixed, I have had patients to take it without finding out what it was.

Catechu.—An extract from the wood of an oriental tree. It is astringent, and is very useful in *diarrhœa*. *Tincture* of catechu is the best preparation. *Dose*, half a teaspoonful to a teaspoonful, in water. An excellent medicine to check troublesome diarrhœa consists of equal parts of *tincture of catechu and paregoric;* of this mixture, the dose is a teaspoonful, repeated according to the urgency of the case.

Cerate.—This word means something made with wax. Simple cerate is made of spermaceti, white wax, and oil of almonds. It is a very soothing and healing application to sore places of any kind, as after a blister, etc. It is harder than cold cream (ointment of rose water), and this is sometimes a decided advantage.

Chalk Mixture.—A convenient medicine for common diarrhœa, made of prepared chalk, gum-arabic, glycerine, and cinnamon water. *Dose*, a tablespoonful for a grown person. Most frequently something is added to make it more "binding" or astringent, as catechu, paregoric, etc.

Chamomile.—This is a plant with bitter and aromatic flowers. Of these a tea is made with boiling water. It may be taken, half a pint daily, as a simple appetizer and tonic in weak digestion or general want of strength. It is not, however, one of the strongest tonics.

Charcoal.—Powdered charcoal is a good "sweetener" of a stomach oppressed with flatulence from indigestion. Dose, half a teaspoonful to a teaspoonful. It is often given with an equal quantity of magnesia.

Very finely powdered charcoal is also a useful ingredient in *tooth-powders;* on account of its cleansing action.

Chloral (*cholral hydrate*).—One of the medicines that promote sleep. It is less powerful than opium, although a very large amount of it taken will poison fatally. It is a white crystalline substance, of a pungent taste and color.

Dose, from ten to thirty grains for an adult; for a child, one grain for each year of its age. It should be taken or given only as prescribed by a physician; and when so advised, left off as soon as his judgment will allow. The same sort of danger attends its use as does that of opium, of forming a *chloral habit*, depending upon it for sleep, and requiring larger and larger doses, with at last great injury to the health.

Chlorate of Potassium (chlorate of potash, commonly called).—A favorite medicine with physicians and others, for *sore mouth* and *sore throat*. It often does more good to sore mouths, in babies especially, than anything else. But it must not be swallowed without limitation. While safe in doses of a few grains, half-ounce doses of it are dangerous; sometimes even producing death.

Dose, for a grown person, from ten to twenty grains; for a child, three or four years old, five grains; dissolved in water. Its solution also makes a very good gargle for sore throat.

Chloroform.—The most prompt and powerful, but also least safe, of the articles used by surgeons as anæsthetics; that is, for patients to breathe before and during operations, in order to prevent them from suffering pain. It may be taken into the stomach in larger quantity than by the lungs, without danger. In flatulent colic, it is often very relieving; but no more so than camphor and cuajuput, as well as opium. *Dose*, by the mouth, ten to forty or fifty drops; in a large draught of water, as it is very pungent. A teaspoonful holds more than 200 drops of chloroform.

I have given it to a number of patients in teaspoonful doses, without any bad effect; only sleepiness, like that produced by opiates. A *chloroform liniment* may be safely used as an outward application for rheumatic or neuralgic pains.

Cinnamon Water.—Made from the aromatic bark of the cinnamon tree of the East. It is a pleasant spicy solution, slightly astringent; good with other things in mixtures for *diarrhœa*. Dose, for a child, a teaspoonful.

Citrate of Magnesium.—Commonly taken in effervescent solution. It is about the least disagreeable of all purgative medicines. Apothecaries mostly keep it already dissolved, in tightly corked and wired bottles. More convenient for keeping in a family is the solid *granular* citrate of magnesium; which is to be dissolved when taken. *Dose*, of the bottled solution, a wineglassful (more, or less, according to the amount of purging needed). Of the granular citrate, from a teaspoonful to a tablespoonful. In the latter dose, it is quite an active cathartic; although not so rapid in its operation as some other medicines; and all persons are not alike susceptible to its action.

Citrate of Potassium.—Like the citrate just mentioned, this has for one ingredient *citric acid*, obtained from lemon or lime-juice. This is neutralized by potassium (an alkaline metal) as it may be also by magnesium; in each case making what chemists call *salt*.

Citrate of potassium acts very slightly, if at all, on the bowels. It is used in solution to cool the system and promote secretion from the skin and kidneys in fever. One way of taking it is in neutral mixture (one drachm of this citrate in four fluid-ounces of water); of which the dose is a tablespoonful every two or three hours. Another way is in effervescent solution. (See effervescing draught.)

Cloves, Oil of.—A strong, warming aromatic, from flower-buds of the caryophyllus aromaticus of the East Indies. A hot *tea* is sometimes made of cloves, to be given in cholera-morbus.

If the *oil* should be taken, for colic, its dose would be not more than a drop or two, on a lump of sugar, followed by a drink of cold water. The *tea* may be made by pouring a teacupful of boiling water on half a teaspoonful of cloves, covering and leaving

it to stand for a few minutes. *Dose*, a dessertspoonful (two teaspoonfuls, or half a tablespoonful).

Oil of cloves is a good remedy for toothache in a hollow tooth. Wet a pledget of cotton well with it, and push it into the cavity of the tooth with the end of a bodkin or knitting-needle.

Cocoa Butter.—Cocoa butter is a good soothing application for *bruises* of any part of the body. It is well always to have it in the house.

Cod-Liver Oil.—Obtained, as its name indicates, from the livers of codfish. It is very nourishing and fattening to wasted and wasting bodies, sometimes checking the progress even of pulmonary consumption. Its taste is quite disagreeable. *Dose*, from a teaspoonful to a tablespoonful (the latter best) thrice daily, for a grown person. Many ways have been tried to make it less unpleasant to take; following it with strong mint-drops, mixing it in coffee, rinsing the mouth first with brandy or whiskey, pouring it into the froth of ale, etc. I doubt whether any way (unless it is put up in *gelatine capsules*, is better than to *salt and pepper* it, and then bolt it down; afterwards rinsing the mouth with tincture of myrrh and water. Children generally do not mind taking it, unless their fears have been aroused by talking about it.

Colchicum.—A plant whose root and seeds are both used medicinally. The *wine of the root* is the best preparation. In large dose it acts on the bowels; sometimes irritating the stomach also. It is a diuretic, and influences the nervous system in a way not very well defined. It was formerly the favorite medicine in *gout*; and probably does as much as any medicine towards curing or mitigating gouty attacks. *Dose* of the wine of the root of colchicum, ten or thirty drops, in water.

Cold Cream.—This is the *unguentum aquæ rosæ* (ointment of rose-water) of the apothecaries. It is a soft, easily melted, and very soothing application for sore places, chapped hands or lips, etc. It becomes rancid when long kept exposed to the air.

Collodion.—This is a solution of gun-cotton in ether. When it is painted upon any surface the ether evaporates, leaving a thin cottony film. *Flexible* collodion, made a little differently, is less apt to shrink together in drying. It is a convenient article to cover a part whose skin is broken or ulcerated, as *sore nipples*, *cracked lips*, etc.

Columbo.—(*Calumba*, root of an African plant) is one of the simple vegetable bitters. Like the rest of its class, it is a tonic to the stomach. It is given sometimes for dyspepsia.

Cream of Tartar (Bitartrate of Potassium.—This is a cooling, mild purgative salt, which also increases the flow of urine (diuretic). It is very often given in *dropsy*. *Dose*, one or two teaspoonfuls, stirred in water. Very little of it will dissolve.

Creosote.—A product of tar. A hot-tasting, sooty-smelling liquid; poisonous if swallowed in moderately large quantity; burning the mouth or skin which it touches.

DIGITALIS PURPUREA.

Physicians advise it in one-drop doses for sick stomach, ulcer of the stomach, etc.

In domestic practice it should be on hand as the most effective remedy for *toothache* in a hollow tooth The end of a bodkin or knitting-needle should be wrapped around with a little piece of cotton, and this be dipped into creosote. Then, carefully, the cotton should be pressed into the hollow of the aching tooth. (It won't hurt, as it at

once kills the sensibility of the exposed nerve-end in the tooth.) If any spills over and burns the gums or lips, rinse at once with cold water. Creosote, so used, does no harm to the teeth.

Digitalis.—*Foxglove* is the common name of the pretty plant whose leaves furnish this medicine. The *tincture* is most used. Physicians give it often when the action of the heart is too rapid, and perhaps irregular. It has also been given in large doses in *delirium tremens*. Its common dose is ten drops, twice or thrice a day. Being diuretic, it is sometimes prescribed in *dropsy*. Its very powerful active principle is *digitalin*. Of this, if taken as a medicine, the *dose* is one-fiftieth of a grain.

Dover's Powder.—Made of *ipecacuanha*, *opium*, and a cooling salt (sulphate of potassium, or some similar compound), this medicine is composing and diaphoretic. Some persons find it agree with them at the beginning of a severe cold, taking it just before going to bed, after a warm mustard foot-bath. *Dose*, ten grains; containing one grain of opium and one grain of ipecacuanha. As this is a full regular dose of opium, it needs to be slept, as well as sweated, off. *Better not* take Dover's powder without the advice of a physician; at least the first time.

Effervescing Draught.—This is a cooling medicine for fever; the carbolic acid gas in it also makes it acceptable to the stomach. It is composed on the following recipe:

Dissolve two drachms and a half of bicarbonate of potassium in four fluidounces of water. To make a draught, pour out a tablespoonful of this solution, and add to it a tablespoonful of water. Then pour into these a tablespoonful of fresh lemon-juice. It will effervesce, and should be drunk at once. If lemon-juice cannot be had, an apothecary may furnish instead a solution containing two drachms of citric acid in four fluidounces of water. A tablespoonful of this, with one of water, may take the place of lemon-juice.

Electricity.—Physicians often advise (or themselves personally apply) different forms of electricity for the treatment especially of *paralysis;* also, for *neuralgia*, *chronic rheumatism*, *old sprains*, *suppressed menstruation*, *lead colic*, and many other affections. Powerful currents or shocks are frequently used to revive persons almost dead from *drowning*, *suffocation*, or *narcotic poisoning*.

Elixir of Vitriol.—*Aromatic sulphuric acid* is another name for this, which is often prescribed as an appetizer; sometimes also for diarrhœa, and occasionally for *hemorrhages*. *Dose*, ten to fifteen drops, in water; best taken through a glass tube, to prevent its touching the teeth; also, for the same reason, washing the mouth out well with water after it.

Elixir Proprietatis (*Elixir Pro.*)—This is an old name for *tincture of aloes and myrrh;* which has a popular reputation as a medicine to bring on the monthly courses when delayed or suppressed. *Dose*, a teaspoonful, in water, twice daily.

Emetics.—Articles which cause vomiting. The most important occasion for their use is when *poison* is known to have been swallowed. Then the quicker and the more thoroughly the stomach is emptied, the better.

Handy emetics in every house are *mustard*, a teaspoonful, or *salt*, a tablespoonful, in a teacupful of *warm*, not hot, water. Let it all be swallowed at once; and follow it in ten minutes with another teacupful of warm water, if it has not in that time taken effect.

Among emetic medicines, *ipecacuanha* is the mildest and safest, and it is usually active enough. In bad cases of croup, with formation of membrane in the throat, *alum* may be added to it. Of powdered *ipecac.* a teaspoonful will usually produce vomiting; of the syrup, a teaspoonful, perhaps needing to be repeated; of the fluid extract, half a teaspoonful.

Tartar emetic (tartrate of antimony and potassium) is too severe and prostrating an emetic for use, at least as a domestic medicine. There are other mineral emetics (sulphate of zinc, sulphate of copper, etc.) which ought never to be used except under medical advice.

Epsom Salts.—*Sulphate of Magnesium*, A very unpleasant medicine to the taste; an active, cooling cathartic. It is (its nastiness apart) useful as a purgative in some inflammatory affections of strong people; for

delicate patients, milder medicines are better. *Dose*, from a teaspoonful to a tablespoonful, dissolved in water.

Ergot: *Spurred Rye.*—A growth on grains of diseased rye plants. When taken into the stomach, it has a tendency to promote contraction of the womb and of the blood-vessels. On account of the first of these effects, it is given after child-birth, to aid in the expulsion of the *placenta* (after-birth), and to check hemorrhage. Its causing contraction of the blood-vessels is a reason for its being prescribed for various hemorrhages, and also in *chronic inflammations*; especially of the spinal marrow. The *wine of ergot* is the preparation most employed. *Dose*, of it or of the *fluid extract*, from half a teaspoonful to two teaspoonfuls, in water.

Eucalyptus.—From the leaves of this Australian tree a *tincture* is made, as well as a solid *extract*, and the essential oil, *eucalyptol*. Lozenges of this drug are serviceable as a *warming expectorant*, in bronchial catarrh. Eucalyptus is also useful in chronic irritability of the *bladder*. *Dose* of the *tincture*, a teaspoonful; *extract*, one to ten grains; of *eucalyptol*, ten to twenty drops, in capsules or a mixture.

Fennel-Seed.—A very mild aromatic; sometimes made into a tea for babies' colic; more often added to *senna tea*, or *fluid extract of senna*, to keep the purgative medicine from griping the bowels.

Flaxseed.—This makes a good soothing drink, flaxseed tea, for sore throat. Pour half a pint of boiling water upon a tablespoonful of whole flaxseed, and stir it up for a few minutes. Then let it stand covered for a few minutes more; but do not put it on the fire to boil, as that would bring out the oil (linseed oil), which is not good to drink. What is wanted in the tea is only the mucilage of the seeds. Lemon-juice and sugar added will make flaxseed tea more agreeable.

Flaxseed *meal* makes a good warm and soft poultice. Mix a sufficient portion of the meal with hot water, into a mushy mass. Spread this with a tablespoon on a piece of thin flannel or old muslin; then double in half an inch of the edge all around, to keep the poultice from oozing out. The best way to have a poultice warm when put on, is to spread it on a hot plate, close by the person to whom it is to be applied. When it is on, cover it at once with a piece of oiled silk, oiled paper, or thin rubber cloth, to keep the moisture in. Without this it will dry up very soon.

A very little sweet oil or fresh lard put over the surface of a poultice before applying it will make it more soothing and more easily removed. For the latter purpose a piece of tarletan or gauze may be laid over it before it is applied. When pain in the part is severe, a teaspoonful or two of laudanum may be poured over the poultice before putting it on.

Fly-Blister.—A plaster of the ointment of Spanish flies (cantharides), applied to draw a blister upon some part of the surface of the body. Such a remedy is only required for a rather severe case of internal inflammation, or for that of an eye or an ear; in either instance, not during the first day or two of the attack. In serious inflammation of the brain, a blister to the back of the neck, or even over a large part of the shaven scalp, is sometimes one of the best of remedies.

A blister is usually made by spreading a piece of buckskin, three or four inches square, with cantharides ointment, covering this with a piece of thin gauze, and laying it upon the part. After from two to five or six hours (according to age and delicacy of the skin) the skin will feel very sore, and on taking the plaster off, the outer skin will be found to be raised in a blister. This may be tapped with the points of a pair of scissors, and the part may then be covered with a rag spread thickly with simple cerate. It will heal in a few days.

For inflamed eyes, the *back of the neck* is the best place for a blister; for severe inflammation of an ear, *just behind* that ear; the plaster being cut to fit there.

Gentian.—A flowering plant, whose root is used in medicine. Its *extract* is made into tonic pills (compound gentian pills) for indigestion, and its *compound tincture* is one of the best tonic preparations given for weakness of the stomach. Gentian is a pure and simple bitter stomachic tonic. Dose of the compound tincture, a tea-

spoonful, in a little water. As an appetizer it is best taken just *before* each meal. If given on account of slowness and discomfort in digesting food, shortly *after* the meal will be the best time for it.

Compound Gentian Pills, have in each pill one grain of extract of gentian, one grain of rhubarb, one quarter of a grain of blue mass, and a quarter of a drop of oil of cloves.

Geranium.—This plant has an astringent root, of which a tea may be made by boiling an ounce (about two tablespoonfuls) in a pint and a half of water down to a pint. Of this the dose is from a tablespoonful to a wineglassful, given as a country remedy for *diarrhœa*.

Ginger.—A fine spice for culinary as well as medicinal use. *Jamaica* ginger is the most used with us. *Essence* of ginger is a very good medicine to have in the house. It is a warming stimulant to the stomach, and aids greatly in relief of ordinary *flatulent colic*. *Dose* of a strong preparation of it (as Brown's essence of Jamaica ginger), ten to thirty drops, in water. It may also be applied outside, over the stomach and bowels; wetting a piece of thin flannel well with it, laying it on, and covering it with oiled silk to prevent too quick evaporation.

Ginger tea is an old favorite stomach-warmer. A tablespoonful or two of the bruised root may have a pint of boiling water poured on it, then leaving it to stand covered for an hour or so. We don't boil *aromatic* teas or other preparations, because that would drive off their *volatile oils*, which are their active principles. Of ginger tea, the dose is one or two tablespoonfuls at a time.

Glycerine.—A sweet, transparent liquid, obtained from fatty substances. Only pure glycerine (Bower's or Price's) should be used. Its principal employment is as an external application; to chapped hands, ears, lips, etc. To a very delicate skin it is, when pure, somewhat irritating. Adding the same amount of rose-water makes a very nice preparation. Glycerine and *borax* mixed make a good paste to put upon sores in the mouth.

In teaspoonful doses, glycerine is gently laxative to the bowels. It is given sometimes for this purpose to children.

Glycerine is *antiseptic;* that is, it tends to keep dead animal matter (meats, etc.) from putrefaction; and to ward off the effects of decay-poison upon or within surfaces of the body. It is therefore a good ingredient in washes for the parts involved after child-birth.

Glycerine with *tannin* makes a very good astringent lotion for frosted feet, also for enlarged tonsils, sore nipples, running from the ears, and fissure of the arms. For the glycerole of tannin, rub together one ounce of tannin (tannic acid) and four fluidounces of glycerine, in a mortar; heat this mixture gently (best in a porcelain dish) until a perfect solution is made.

Gum-Arabic.—A soothing (not nourishing) material for a drink, in cases of irritation of the throat, or cough. It is simply dissolved in water, a tablespoonful to a half pint. Some persons like to chew and dissolve the gum in the mouth for the same purpose, instead of licorice or candy.

Hamamelis Virginiana is the *witch hazel;* principal ingredient in *Pond's Extract*. *Tincture* of Hamamelis is much used by some physicians in England for *spitting blood;* if the blood comes from the stomach, one drop of the tincture in water, every ten or fifteen minutes at first; after a few doses, at longer intervals until relief is afforded. If it be hemorrhage from the *lungs*, the dose of the same tincture may be one drop every hour or two. Larger doses will cause throbbing headache with some persons. It is also given for bleeding from the bowels or from piles.

Hoffmann's Anodyne.—A strong warming stimulant to the nervous system, with some anodyne or pain-relieving power. It is useful in attacks of gout in the stomach or heart, palpitation from or with weakness, *angina pectoris* (which see, hereafter), *asthma*, etc. *Dose*, a teaspoonful, in water.

Hops.— A *Hop-pillow* is sometimes used for sleeplessness. To prepare it, fill a small pillow-case with hops, which have been sprinkled with alcohol to bring out the active principle.

Tincture of Hops, dose a teaspoonful, is a mild hypnotic or sleep-producer. Tincture of *lupulin* (the active principle of hops)

has more power of the same kind; but both are far weaker in this action than opium or chloral and their preparations.

Hot Water.—Hot water, as a means of conveying heat to the interior of the body, is a stimulant to the *stomach*, to the great *nerve centres* back of the stomach, and to the general *blood-circulation*. Hence the efficacy of drinking a goblet of hot water at regular intervals, as preceding each meal. Like *rubbing*, *mustard-plasters*, or other stimulants applied to the *outside* of the body, such internal excitation may make a powerful and often serviceable alternative impression.

Hot water is now much used by surgeons and obstetricians for the *arrest of bleeding*, from injured surfaces, from the womb after labor, etc. For this purpose, it should have a temperature of about 120° Fahr.

Hunyadi Janos Water.—A laxative (mildly purgative) mineral water, sold in bottles. Dose, a wineglassful.

Huxham's Tincture of Peruvian Bark.—A good tonic in feeble conditions of the body, as in slow convalescence from an illness, running down with work in summer time, etc. *Dose*, a teaspoonful, three times a day, in water; best, a short time before each meal.

Hydrochlorate of Cocaine.—A preparation of the active principle of the leaves of the South American *erythroxylon coca*. It has been found, when applied (a few drops of a four per cent. solution in water) to the eyeball, throat, etc., to render the part insensible to pain; so as to greatly facilitate some surgical operations.

Hyoscyamus.—From the leaves of this plant (henbane) are made a *solid extract*, a *fluid extract*, and a *tincture*.

Hyoscyamus is an anodyne; a good deal like opium in its effects on the system, but weaker; and, instead of constipating, tending to act gently on the bowels. Of the extract (solid), the dose is two or three grains. Of the fluid extract, from two to ten or fifteen drops. This last is a very good quieting medicine for the violent coughing spells of severe *whooping-cough*.

Hypophosphites.—Compounds containing phosphorus, in a peculiar state of combination with other medical substances. Much used as an effective tonic, in low states of the system, is the preparation called *Fellows' Hypophosphites*. *Dose*, a teaspoonful, in water, after each meal.

Ingluvin.—An extractive obtained from the gizzard of the common fowl, and, like *pepsin*, used as a tonic to the digestive organs. Some physicans report it to be very effectual in relieving vomiting; especially the "morning sickness" of pregnancy. *Dose*, from three to ten grains.

Inhalation.—This is breathing in vapor of some kind; which is considerably employed in the treatment of diseases, especially of the throat and lungs; as well as (by the use of ether, chloroform, and nitrous oxide), to prevent pain during surgical or dental operations.

Smoking is a simple method of inhalation, acting most powerfully when long pipes (narghileh, chibouk) are used, requiring chest-breathing to draw the smoke through the pipe. Chinese opium-smokers, however, actually inhale the vapor of the narcotic into their lungs.

Fig. 189.

CROUP-KETTLE.

Pure steam is soothing to an irritated throat. It may be inhaled by placing a towel, or a paper funnel, over a kettle which is kept boiling, and breathing the vapor which emerges from the spout. A simple *inhaler* may be made of a wide-mouthed bottle or jar, through whose cork two glass tubes are passed, one straight, the other bent in the middle. The liquid to be inhaled from should not more than half fill the bottle. The straight tube should reach down a little below the surface of the liquid:

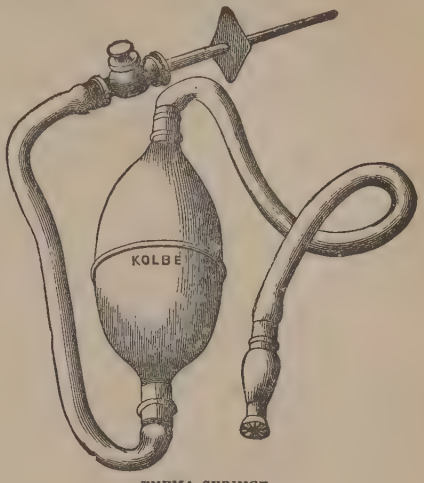
the end of the bent one should stop an inch or so above it. Thus, when the patient draws a breath from the latter, the air which he receives has to pass through the medicated liquid. Tar, creosote, iodine, hops, laudanum, etc., may be thus inhaled. A volatile material, like *ammonia* or *nitrite of amyl* may be inhaled directly from a bottle, small or large. The former of these is a potent stimulant in cases of fainting; the latter (nitrite of amyl), often gives relief in attacks of *angina pectoris*.

Instead of vapor, *fine powders* are sometimes blown into the throat. For sore throat in children, *alum* powder may be thus blown in with a glass tube or a long quill; or with one of the powder-squirts sold by apothecaries for blowing borax, etc., into cracks to destroy insects.

Atomization is the introduction of a very fine *spray* of liquid into the throat and air passages. Such a spray is made by the *odorators* which are used to spread cologne or other perfumes in the air. Instruments are made for atomizing in cases of irritated throat, with which solutions of *ipecac.*, *chloride of ammonium*, etc., can be applied.

A *cigarette* for medicinal inhalation may be made by the use of a glass tube, six or eight inches long. Near one end of the tube put in a piece of fine soft sponge. Drop into the tube, from the other end, the material to be inhaled; tar, creosote, tincture of iodine, gum camphor, etc. Then insert a second piece of sponge near the upper end of the tube; through this the patient is to breathe for the inhalation. Cotton or tissue-paper will do instead of sponge for the purpose.

Injections (*enema*, *enemata*).—These are used for various purposes. Most commonly, into the bowels, to empty the lower bowel, when this is considered more prompt and convenient than medicine by the mouth. The old-fashioned way was with a large syringe, holding about a pint. Now, gum-elastic ball-and-tube arrangements are employed, which one can use himself. Only common sense is necessary for the introduction of the oiled end of the tube of either kind; and gradual moderate force to cause the material to enter. It should then be kept by the patient for five or ten minutes, for an effectual operation. Smaller syringes, of course, half or quarter pints, are suitable for children. For a child, warm water alone



ENEMA SYRINGE.

will sometimes suffice. A common mixture for opening injections is made by mixing well together a pint (nearly) of soapsuds (castile soap, at least for delicate persons), a tablespoonful of salt, a tablespoonful of molasses, and a tablespoonful of oil, either sweet or castor oil, according to the case.

Injections are used sometimes to relieve pain, or to check obstinate diarrhœa. Of the former, the most extreme kind of *colic*, passing a *gravel-stone* from the kidney to the bladder, or of a *gall-stone* through the gall-duct, or *strangury*, or threatened *abortion* (miscarriage during pregnancy) are examples. In *dysentery*, as well as in diarrhœa, such injections may be called for; laudanum being most frequently (in all the above-mentioned cases) so employed.

For a grown person, the smallest amount likely to do good in such a way is thirty or forty drops of laudanum. It is best to mix it, for injection, with a small amount of starch (prepared as for the laundry, only thin enough to pass through a syringe), and then to use a small syringe—holding from half an ounce to two ounces only. The object here is to have the material injected to remain in the bowel, as long as it will; so that the anodyne (laudanum) may have time to take effect. Sometimes great suffering will justify sixty-drop injections of laudanum,

or even more; but such had better be used only under the advice of a physician. Other medicines also are occasionally presented for administration in the same way. Now and then four-ounce enemata of *flax-seed tea* are employed in dysentery.

Nourishing enemata are often resorted to, when, for various reasons, food cannot be taken by the mouth. Half or a quarter of a pint will be enough at a time for this purpose; as it is important for it to remain and be absorbed. Beef-tea, milk, or raw eggs beaten up with milk, will be the best materials. Sometimes pure fresh beef's blood is so used. An example of a nourishing injection may be the following:

To five ounces of finely scraped meat, and five and a half ounces of finely chopped sweetbread freed from fat, add three or four fluidounces of lukewarm water. Stir together into a pulp. It will be well to wash out the lower bowel with an injection of warm water, about an hour before introducing a nourishing enema.

It may be mentioned, in view of a possible emergency in the absence of a physician, that the instrument used for hypodermic injection is a small glass syringe made for the purpose, ending in a tube of steel or silver to puncture the skin and introduce the liquid. Having drawn into the syringe the amount to be used, the skin of the part selected (an arm, the back, abdomen, a thigh, or the calf of one of the legs) is drawn up with the forefinger and thumb of the left hand. With the right hand, the point of the tube (after being *oiled*) is pushed almost horizontally through the skin, and then the fluid is rather slowly pressed out of the syringe. The latter is to be withdrawn without twisting it; all must be done so as to cause as little irritation as possible. From one-third to one-half of the dose by the mouth is the quantity of any drug employed in this way. *Anodyne* and *stimulant* medicines are, more than any others, used hypodermically. Sometimes the habit of taking hypodermic injections of morphia is acquired, and is as hard to break as smoking opium or laudanum drinking.

Iodine.—*Lugol's iodine solution*, the *tincture* of iodine, and *iodide of potassium*, all have medical uses; but not, as a rule, in domestic practice. We may except, perhaps, the outward application of *tincture* of iodine, which may be *painted* upon the chest (with a large camel's-hair pencil) for a continual cough (chronic bronchitis), or may be used as a counter-irritant in several other kinds of cases.

Physicians prescribe *iodine* in *Lugol's solution* as an alternative in *scrofula* and in *goitre* (which see hereafter). *Dose*, ten drops, twice or thirce daily, in water. *Iodide of potassium* is a very important medicine in a number of diseases; most particularly and certainly useful in constitutional *syphilis*, and especially of all in *syphilitic rheumatism;* also, in *anuerism of the aorta*. *Dose*, from five to twenty grains, dissolved in water, thrice daily.

Iodoform.—A powerful drug, kept in the apothecary shops in the form of a powder. Sometimes prescribed as an internal medicine in *scrofula*, *ulcer of the stomach*, etc., in one-grain doses; but it is much more often used as an outward application. It is very healing to *foul ulcers*, *wounds* not doing well, *syphilitic sores*, etc.; being antiseptic; that is, corrective and preventive of decay and putrefaction. While, however, a little of the powder of iodoform may be safely sprinkled now and then over a foul sore, to promote its cleansing and healing, it is not safe to use it without limit; as a large amount of it absorbed may be even poisonous. A bottle or box of it ought, when kept, to be labelled *poison*.

Ipecacuanha.—This is an active but mild emetic in large dose. In smaller quantities, it is an excellent loosener of cough (expectorant), and also a promoter of perspiration (diaphoretic). It is one of the best of remedies in *dysentry*, in a way not exactly explained. Used in *powder* (chiefly as an emetic, except when made into *pills*), *syrup* and *wine*. The *syrup of ipecac.* ought to be in every family medicine chest. It is the best first medicine in *croup* and in *bronchitis* (a heavy cold on the chest, with cough at first dry, and needing to be loosened). Also, it will answer as an emetic. *Dose*, to *cause vomiting*, a teaspoonful, repeated in ten or fifteen minutes if it does not take effect. As a *cough-loosener* (expectorant), five to ten drops for an infant, a quarter to

a half teaspoonful for a grown person. While moving about, a quarter teaspoonful will usually be enough; half a teaspoonful will not often sicken the stomach if taken lying down, or just before going to bed. The *wine* of ipecac. is very similar in effect to the syrup, but is rather stronger; and the form of syrup has some advantage for use as an expectorant medicine.

Iron.—There is iron in the blood of every man, woman, and child. Whether we ever have too much of it is not certain; but, without doubt, many thin, pale, and weak people have too little of it. The condition of *poverty of blood* is called, medically, "*anæmia*." Several preparations of iron are used. The strongest, and also the most convenient to keep and use, is the *tincture of the chloride of iron*. *Dose*, ten to thirty drops, in water. The only objection to it is that it has a disposition to stain the teeth brown or yellow. This may be prevented by taking it through a tube of glass, or of two quills put together. All druggists keep glass tubes for such purposes. The tincture of chloride of iron is somewhat astringent; and therefore is useful in *hemorrhages*.

Syrup of iodine of iron unites the properties and influences of iron and iodine. It is, therefore, an alterative tonic, good in many cases of *scrofula* and in some other chronic complaints. An *alterative* medicine is one which tends to change the condition of an organ, or of the whole constitution; setting up its own innocent and transitory action instead of the disturbing and life-shortening action of the disease. *Dose*, of the syrup of iodide of iron, ten to thirty drops, in water, two or three times daily.

Pill of carbonate of iron (Vallet's mass) is a very good form to make up with *quinine* in treating obstinate cases of *chills* (intermittent fever). Three grains of the pill of the carbonate of iron with one grain of quinine, three times a day, taken for a month, after "breaking" the chills, will cure ninety-nine cases in a hundred of that troublesome affection.

Other "chalybeates," as preparations of iron used to be called (iron *springs* are still called *chalybeate* waters), are: *citrate* of iron, a pretty red salt, not unpleasant to the taste, *dose*, five to ten grains; *phosphate*, a green solid, *dose*, five to ten grains; *solution* (liquor) of the *nitrate* of iron, the most astringent of these preparations, and beneficial in *chronic diarrhœa*; *dose*, ten drops in water, thrice daily; *solution* (liquor) of *sub-sulphate* of iron, generally called *Monsel's* solution; a good strong astringent for outward *application*, to aid in *stopping bleeding* from any part.

Jalap.—This is a very active purgative; too much so for common use, but sometimes valuable in particular cases. In *dropsy* it is occasionally prescribed, along with cream of tartar, or with squills. I remember its excellent effect in a very bad case of *scarlet fever*, with stupor and constipation. *Dose*, ten to twenty grains.

Juniper.—The berries of the juniper tree or shrub; used in medicine is as a diuretic in *dropsy*. A tea may be made by pouring a pint of boiling water upon half an ounce of bruised juniper berries, stirring and then leaving it to stand for half an hour before pouring it off or straining it. A tablespoonful of cream of tartar may be added; and at least half a pint of this tea may be drunk (a little at a time) in twenty-four hours, for dropsy.

Compound spirit of juniper is what pharmacists call an "elegant" preparation. It has the advantage of being given in small dose, a teaspoonful or two, in water; and is also, from its stimulant property, best suited to feeble patients, or those with delicate stomachs.

Lactucarium.—An extract from the common garden lettuce (lactuca). It is mildly narcotic and anodyne; promoting sleep like opium, but with much less power. The *syrup* of lactucarium (named *Aubergier's* syrup), is the most convenient preparation. *Dose*, one or two teaspoonfuls.

Lady Webster's Pills.—The important thing in these is *aloes*. They are purgative, and, like other aloetic preparations, have some effect in promoting a tendency of blood towards the pelvic region of the body. They have much reputation as aiding to bring on delayed or suppressed menstruation. *Dose*, one pill, at night. Some persons find half a pill enough to operate on the bowels quite as much as is best. A few will need to take a second pill for such an

effect. It will succeed in a considerable number, but not in all cases.

Laudanum.—Tincture of opium. One of the strongest of the opiate medicines. It is therefore a powerful anodyne and hypnotic (*sleep-producer*).

Dose, for a grown person, from fifteen to thirty drops. In diarrhœa, however, as small a dose as ten drops will often answer. Children are more affected by opiates, in proportion to their age, than by any other kind of medicine. One drop will be more than enough for an infant less than a year old; at least to begin with.

Laudanum is often applied *externally* to relieve pain. On a sound part of the skin, in a grown person, half a teaspoonful may be so applied with safety; but only a few drops at a time, even externally, in the case of a young child.

Anodyne injections into the bowels are most frequently made of laudanum and starch. (See injections.) For *hypodermic* injection (under the skin) solution of morphia is preferred.

In keeping laudanum, it should be remembered that it strengthens with age, by evaporation of some of its alcohol. (All *tinctures* are made with alcohol.) What is left at the bottom of an old bottle of laudanum may be two or three times as strong as a fresh article would be.

Lavender.—Aromatic flowers, well known for their pleasing perfume. The only preparation used as a medicine is the *compound spirit* of lavender. It is an agreeable warming, gently stimulating article; good in *colic*, sometimes for *nausea* (sickness of stomach), and for *dysmenorrhœa* (painful menstruation). *Dose*, a teaspoonful, in water; often given in hot water.

Lead, Sugar of.—A cooling application, often used for *inflammations*. Lead-water may be made by dissolving it in water; but with greater convenience by adding to water the *solution of subacetate of lead* (Goulard's extract), which is a very strong liquid prepation. Of this last one drop to four tablespoonfuls of water will be generally strong enough for lead-water. It may be applied to a much-inflamed *joint*, or (outside) of the *eyeball* or *eyelids*. For the eyes, the best way to use it is with a *camel's-hair pencil*, *painting* the outside of the closed lids frequently with it. It should not be taken internally except under direction of a physician. *All preparations of lead are poisonous.* Care must be taken with them accordingly, that none be swallowed unawares.

Lime-water.—Simply a solution of lime in water. Anybody can make it, by putting pure, clean, unslaked lime in pure water. Take a large bottle, and press into it enough lime to fill about one-fourth of its depth. Pour in water enough to fill it full, then cork and shake it awhile. On standing, the clear lime-water will be ready for use. If all the lime is dissolved, add a little more, so as to be sure that the water is saturated; that is, contains as much as it will dissolve.

Lime-water is the main stand-by as a domestic remedy for vomiting, or for nausea threatening it. *Dose*, from a teaspoonful to a tablespoonful. When nourishment is needed, a tablespoonful of milk may be added to one of lime-water. Otherwise, it may be diluted with an equal amount of water, or cinnamon-water.

Lime-water is often added with great advantage to milk for babies, when they have *sour stomach* or *diarrhœa*, as it is antacid and somewhat astringent. A tablespoonful may be put in every half pint of the child's food, so long as such an occasion exists for it. No harm will be done if it should be taken in that way for days, or even weeks, together.

Liquorice, also spelled licorice.—The root of an herb growing on the shores of the Mediterranean Sea. The *Extract* is chiefly used. It is black, hard, and sweet. There is also a *fluid* extract. Neither has any important property except some soothing influence over the lining membrane of the throat. By "sympathy of contiguity" this influence extends from the gullet into the windpipe, and thus liquorice helps to soften and loosen *cough*.

Lobelia.—The leaves and tops of this plant are employed best in the form of *tincture*. It is a powerful sedative medicine; capable, like tobacco, in large doses, of producing fatal prostration. Its most important use is for *asthma*. It is often very relieving in attacks of that affection. It may be safely given (watching its effects, and

stopping it at once if vomiting or great faintness result) in half-teaspoonful doses, every half hour or hour, until three or four doses, if necessary, have been given. Another way is to give twenty drops of tincture of lobelia, with twenty drops of syrup of ipecac., every twenty minutes, for three or four doses.

Logwood.—The reddish heartwood of a Central American tree. It was once more used than now, as a mild astringent for *diarrhœa*. A *tea* may be made of it by boiling an ounce of it, with a drachm of cinnamon, in a pint of water, for ten minutes. *Dose*, a wineglassful or less.

Magnesia.—A valuable home medicine, as an antacid laxative. It is particularly good when there is *constipation*, with *sick stomach* and *headache*. Even at the beginning of *diarrhœa* and *cholera morbus*, it is many times the best corrective medicine. *Calcined* magnesia is the preferred form. Water does not dissolve it; so it must be stirred well in a little water when taken. *Dose*, a full teaspoonfull for a grown person, if designed to operate on the bowels. Much less will do to relieve acidity and nausea. Magnesia is not a good medicine to take when one has *piles;* as it sometimes produdes a *burning* in operating freely. It is not, however, a powerful cathartic. *Citrate* of magnesium has been spoken of on a previous page.

Malt Extract.—Especially in Germany, large use is made of preparations under this name. As sold in this country, some of them are too sweet to agree with the stomach. The best is Johann Hoff's "Malz-Extract;" made in Berlin, and imported in short thick bottles. The use of this extract is as a *tonic*, particularly when digestion is weak. It may be taken at meals, a quarter of a tumblerful at once. When taken at bed-time, it is promotive of sleep.

Manna.—A sweet substance obtained from the trunk of the flowerish ash tree, in the countries bordering on the Mediterranean. Its only important use is to open the bowels of children and delicate people, including women during pregnancy. It may be eaten like sugar. The *dose* is not very definite; a little experience will show how much is required for the desired effect.

Mineral Waters.—These may be classified simply as: 1. Alkaline. 2. Saline. 3. Sulphurous. 4. Chalybeate, containing Iron. 5. Purgative. 6. Limestone or Calcareous. 7. Thermal, *i. e.*, Warm or Hot Springs. While some special properties and effects upon the system in states of disease belong to each of these classes of waters, with differences also among the members of each class, they all agree in exerting an *alterative* influence, which is especially likely to be beneficial in *chronic* disorders. Some waters are largely supplied for particular remedial uses; as the Apollinaris, an agreeable table carbonated (effervescent) drink; Hunyadi Janos, Püllna, and Friedrichshalle, for purgative action; Vichy water (containing soda), to relieve acidity, etc. The most famous mineral waters in our country are those of Saratoga (several kinds, all more or less *saline;* with more or less sulphur also, or iron, iodine, bromine, etc), Sharon (*saline* and *sulphurous*, with some *iron*), Richfield (*sulphurous*)—all these in the State of New York; Bedford (chalybeate, *i. e*, containing iron, and purgative), in Pennsylvania; and a remarkable variety of mineral springs among the mountains of Virginia—White and Red Sulphur, Warm Springs, Hot Springs, etc. In *chronic rheumatism*, *liver* and *kidney* disorders, obstinate affections of the *skin*, and *nervous* troubles of some standing, the best alterative effects from using mineral waters, internally or in baths, may be hoped for. A physician's advice had better always be obtained before they are resorted to in cases of serious disease of any kind.

Morphia.—It is not necessary to have morphia in the family medicine chest; laudanum and paregoric will do for opiates under almost all circumstances.

Musk.—A very strongly odorous substance, secreted by the musk-deer of the Himalaya Mountain region, in Asia. It is antispasmodic, that is, composing to disturbed nerves. Prescribed sometimes for *whooping-cough* and for *convulsions*. *Dose* five to ten grains, in pill or mixture.

Mustard-Plaster.—One of the most frequently useful of all domestic remedies. When anybody is suffering pain, or, indeed, illness of any kind, if you do not know what

to do, put on a *mustard-plaster*, near the seat of the trouble. Should you not find where that is, put the mustard-plaster on the middle of the back. If properly attended to, it can do no harm; and in ninety-nine cases in a hundred it will do some good; sometimes a great deal of good.

To make one, mix from one to three or four tablespoonfuls of mustard (either white or black, so called) with the same amount of wheat or Indian flour. Mix these with enough hot water to make a paste. Then, on a hot plate, near the person who is to have it on, lay a piece of soft old muslin, or thin flannel, twice as large as the plaster is to be; but spread the mustard and flour paste only on half of the rag. This done, double the other half over it, and stitch the edges together, all around; or, turn the edges over instead, to keep the stuff in. It may be put on at once, while warm, and left on until it is felt to burn quite smartly, if the patient is conscious. If not, it must be looked under, in a quarter of an hour or so, and, if the skin is decidedly red, take it off. As soon as it is removed, lard, tallow, cold cream, or vaseline should be gently rubbed over it, or a fresh rag spread with one of them may be laid upon the part. We never intend to raise a blister with mustard, it is too severe. The aim is just to heat the skin very actively, mostly for its use as a counter-irritant, to relieve some irritation of an internal organ.

Ready-made mustard-plasters can be had now of pharmacists, and are very convenient. One of them has only to be dipped for a moment or two in hot water, and it is ready to apply at once. It is well always to have a supply of these in the house.

Mush and Mustard Poultices are often very useful in inflammatory and other painful affections. They are made with one part of mustard to four parts of mush (of Indian meal) mixed, and applied hot on the chest or abdomen, as required, and covered with oiled silk, or oiled paper, or rubber cloth, to retain the moisture. Such a poultice may stay on for hours, keeping up a moderate and bearable excitement of the skin (warming and counter-irritant) much longer than could be borne with a strong mustard-plaster.

Myrrh.—A gum-resin long known for its aromatic properties. Internally given, it is stimulant and tonic, and is an ingredient in some preparations intended to act upon the bowels or to restore suspended menstruation. For home use, the tincture of myrrh is very serviceable in the care of the mouth. A few drops of it in a little water, say about twenty drops in a quarter of a tumblerful, used as a mouth-wash, will correct a bad odor in the breath. Such a wash may be used with advantage twice daily, in cleaning the teeth. When the teeth begin to decay, a strong myrrh wash, often used, will check or retard their destruction. If a hollow tooth becomes tender, and begins to ache, pure tincture of myrrh put into it will sometimes stop the trouble at the beginning. If, however, it does not at once give relief, the stronger application of creosote should follow it.

Nitrate of Silver, or *lunar caustic.* Physicians often use this as an alterative application to the throat, eyes, or ulcerated skin, in certain states and stages of *inflammation.* It is also sometimes given in pill as a medicine; most beneficially in *chronic (gastritis) inflammation of the stomach. Dose*, internally, a quarter of a grain (usually with as much of opium), thrice daily, gradually increased, when it does good, to nearly or quite a grain. It was formerly much employed in the treatment of *epilepsy.* When long continued, it has sometimes dyed the skin, making the face almost as black as ink.

Nitre.—A name for *saltpetre;* called by chemists *nitrate of potassium.* It is a cooling, sedative salt, when taken internally. In ten-grain doses it is a useful medicine in *acute bronchial* inflammation (bronchitis), and might be added with advantage, more often than it is, to *cough-mixtures* of the loosening kind.

Sweet Spirit of Nitre (*spirit of nitrous ether*) is a liquid preparation, whose properties are gently stimulating, diaphoretic, diuretic, and composing to the nerves. It has long been one of the most popular of domestic medicines for fever. It does the most good, however, in the *least inflammatory* conditions, and, when fever is high, its dose should not be large. Half a teaspoonful of it in a tumblerful of cold water, drunk, a

little at a time, as thirst prompts, through the night, will be more likely to relieve a hot fever, with the coming of perspiration, than a whole teaspoonful taken at once. This is because the large doses "stimulate the circulation above the secreting point," to use an old but true medical phrase.

To *increase the action of the kidneys*, as a *diuretic*, sweet spirit of nitre is very often useful. For this purpose, in the absence of high fever, larger doses will suit than when that condition is present. From half a teaspoonful to a teaspoonful, well diluted with water, will be a diuretic dose for an adult; to be repeated in a few hours, if needful.

Nitrite of Amyl is a powerful agent, used by inhalation, from one to four or five drops only at a time, as a remedy for the attacks or paroxysms of *angina pectoris*. It commonly causes immediate flushing of the face. If used, it should be as soon as the attack (with distress and pain about the heart, and along the left arm) begins.

Nux Vomica.—A poisonous seed or nut whose active principle is the alkaloid *strychnia*. It is best used in *extract* or *tincture*. Both are bitter tonics, with a powerful action on the nervous system, especially the spinal marrow. Leaving what we may have to say about this last action until we come to *strychnia*, it may be mentioned that physicians often find *extract* of nux vomica a good addition, in small dose (a quarter to half a grain), to tonic pills for continued debility. The *tincture*, in ten-drop doses, in water, is an excellent medicine for great *weakness of stomach*, with *flatulence*. Larger doses (if even these) should not be ventured upon without medical advice; on account of the very powerful nature of the active principle of this drug. The tincture of nux vomica should be marked "poison."

Olive Oil.—Probably the gentlest of all laxatives; in teaspoonful to tablespoonful doses. For a delicate infant, needing to have the bowels acted upon, a teaspoonful is very good. The imitation of true olive oil, sold under its name, or as "sweet oil," is less bland, but will answer if the genuine European article cannot be obtained.

Sweet oil, *saturated with camphor* (camphorated oil), makes an excellent application for more or less inflammatory swelling; as for example, a mother's breast threatening to become inflamed while she is nursing; or, more often, when her infant ceases to draw milk, as from illness or the death of the child.

Sweet oil, with an equal quantity of *aqua ammoniæ* (water of ammonia) or aromatic spirit of ammonia, makes *volatile liniment;* an excellent outward application for sore throat.

Opium.—If all the medicines in the world were to be destroyed, except three, and we could choose the three, they should be quinine, opium and iron. The first cures the greatest number of cases of illness; the second gives the happiest relief to severe pain; and the last does the most to build up a debilitated body. Of the preparations of *opium*, *laudanum* and *morphia* have been mentioned. The dose of *opium* in substance is one grain; equal to thirty drops of laudanum, or a full teaspoonful of solution of morphia (not Magendie's solution).

Paregoric is the *camphorated tincture of opium*. Its odor and taste are partly due to the oil of anise-seed with which it is flavored. It contains only one grain of *opium* in a tablespoonful of *paregoric;* being therefore a much weaker opiate than laudanum; which has about four grains of opium in each teaspoonful.

POPPY FLOWER

Dose of paregoric, a teaspoonful, more or less, according to the occasion for its use. In *diarrhœa*, for example, quarter-teaspoonful doses will often answer the purpose. Smaller doses, of course, are suitable to give to *children*.

Pepper.—Of the two kinds used with food, red pepper (*capsicum*) is the more stimulating. It is sometimes given by physicians as a stimulant, in five-grain pills. A much more common use for it is to excite the circulation of the skin, as a rubefacient; a power which it shares (though in less degree) with mustard. In *cholera*, when the skin is cold, rubbing with whiskey and red pepper is one of the best things to restore the circulation. It may be employed for the same purpose in any analogous, low and cold, condition.

Peppermint.—*Essence* of peppermint is a pleasant, warm aromatic; given as good for *colic* and *sick stomach*. *Dose*, ten drops for a grown person; for an infant, from two drops down to half a drop (that is, add one drop to a desertspoonful of water, and give of this a teaspoonful at once).

Pepsin.—Hard to get pure. Given for weak digestion. *Dose*, 5 grains.

Permanganate of Potassium.—This "salt," which gives a beautiful red color to water, has a remarkable action on all organic (animal or vegetable) matter. It is one of the best disinfectants. Five grains of it in a pint of water will make a solution suitable to wash out vessels used in the sick room with patients having contagious or infectious diseases. Internally, permanganate of potassium is highly recommended (in two-grain doses, dissolved in distilled water, twice daily) by some physicians in *amemorrhœa* (delay or suppression of the monthly courses). As it sometimes disagrees with the stomach, it must be used with care, and can hardly be placed among the domestic medicines.

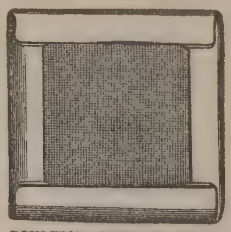
Phosphorus.—Too dangerous for use as a domestic medicine, this is sometimes given by physicians as a powerful nerve-stimulant. *Dose*, one-thirtieth of a grain. Phosphates are safe compounds, often used. Parrish's and Horsford's are very popular tonic preparations. Of the latter (acid phosphates), the dose is half a teaspoonful, in water, just before or after a meal.

Pink-Root.—This American plant (*Spigelia Marylandica*) is a very good medicine for *worms* (*vermifuge*). It may be made into a *tea* thus: Put together half an ounce of broken and bruised pink-root; senna leaves and fennel seed, each two drachms; manna, one ounce; and boiling water, one pint. Let it stand (after stirring) covered for an hour. *Dose*, a wineglassful for an adult, half a wineglassful for a child two or three years old, thrice daily. It is best not to go beyond these doses, as, in very large amount, it acts poisonously. There is a fluid extract of spigelia, also, a convenient preparation; *dose*, a teaspoonful; and still better (because the senna makes it more sure to pass off by the bowels), the fluid extract of spigelia and senna; *dose* of this also, a teaspoonful, repeated every two or three hours until it operates.

Podophyllin, or *Resina Podophylli*—This is an active principle obtained from the root of the common May-apple (*podophyllum peltatum*). The powdered root itself may be taken in doses of ten to twenty grains. Of *podophyllin*, the dose is but from one-sixth to one-half or three-fourths of a grain. It is a powerful, though slowly-acting cathartic; believed also to act more than most purgative medicines on the liver.

Potassa (Potash).—Solution of potassa is sometimes given as a medicine by physicians. *Caustic* potassa (vegetable caustic) is the solid stick, which, with care, may be used to destroy warts. More often, bicarbonate of potassium is employed as an antacid, in ten or twenty-grain doses; and as an ingredient in *effervescing draught* (which see). This bicarbonate is also the *sal aeratus* (gaseus salt) of the bakery; as, like bicarbonate of sodium, it gives off carbonic acid gas when an acid, such as tartaric acid, is added to it.

Poultices.—These are used to warm and soften the skin, when applied to inflamed parts of the surface of the body; particularly when a *gathering* (suppuration, abscess) is expected. Also, they often do good in cases of *internal inflammation* (*pneumonia*, for example) by favoring the return of the blood to the skin, and thus unloading the part troubled with excess of blood.



POULTICE, COVERED WITH GAUZE.

Flaxseed, (linseed), *bran*, *mush*, *slippery-elm bark*, *charcoal*, *chopped carrots*, and *lye*,

are among the materials most needed for poultices.

Flaxseed meal, mixed with hot water, makes a good, soft convenient poultice for common use in "gatherings" of different parts of the body. Mix the meal well with enough hot water to make it hold together and spread easily, and yet not too soft to stay where it is put; a poultice should never run. For use, it should be spread upon a piece of flannel or muslin laid on a hot plate or hot waiter; something hot near the patient, so that it will be warm when applied. The edges of the rag should be turned over, to the width of about an inch, to keep the stuff in, and upon it may be laid a piece of thin and soft *gauze* or tarletan. The latter makes the poultice easier to remove, but is not otherwise necessary. A few drops of sweet oil (or lard oil) may with advantage be poured, or a little vaseline spread, upon the surface of a flaxseed poultice. When *pain* is great, half a teaspoonful to a teaspoonful of laudanum may be poured upon it. As soon as the poultice is put on the part, it should be covered with a piece of oiled silk, oiled paper, or thin rubber cloth, to prevent evaporation, and thus keep it moist. Without this, it will dry and become hard and cold in a little while. *Bran* will do as a substitute for flaxseed meal, when the latter cannot be obtained.

Bread and *mush* poultices are made and applied in the same way. One made with crumbs of *moderately stale bread* and *hot water* (better this always than milk, which may sour unpleasantly) is as soothing to the part as any poultice can be. Powder or slips of *slippery-elm bark* are also very soft, and perhaps more cooling to an *irritated skin*.

A *mush* poultice (of indian meal) is the warmest kind; very suitable for application in *internal inflammations*, as *pneumonia*, *pleurisy*, *dysentery*, etc. It may be made by by using hot mush, prepared just as if it were to be eaten; spread, applied, and covered in the same way as a flaxseed poultice.

In changing or renewing a poultice, be sure to have the fresh one warm, close by the patient, so that the part will not remain for a moment uncovered. Should it do so, the chill caused might more than undo all the good effected by the poultice.

A *charcoal* poultice is only suitable for a nasty, and especially a *mortifying* (gangrenous), part suffering from disease or injury. Finely powdered charcoal should be used; two parts of it with one part of Indian mush. Warmth is not important for this kind of poultice unless the limb or other part affected is cold at the time. Such poultices need to be changed often. *Yeast* poultices are sometimes employed, but I am quite doubtful of their beneficial action.

Lye (ley) poultices may be made by mixing common lye from ashes, or a druggist's solution of potassa, with flaxseed or Indian meal. They are not often used nowadays, being formerly applied to punctured and torn (lacerated) wounds, as a means of preventing *lock-jaw* (tetanus). Better, for this purpose, is *laudanum*, applied directly to the part. If a lye poultice is so used, laudanum should be added to it.

Pumpkin Seeds.—These have a deserved reputation, as capable of driving a tapeworm out of the bowels. For such use, an ounce (about two tablespoonfuls) of the fresh seeds should, after removal of their outer skin, be beaten, with a tablespoonful of sugar, into a paste, then mixed in milk or water, and drunk, either at once or in two draughts half an hour apart. Such a dose should be taken after fasting for from twelve to twenty-four hours, and should be followed in three hours by a tablespoonful dose of castor-oil.

Quassia.— A bitter wood which is a good, simple stomachic tonic, suitable for *dyspepsia*. It is best taken in the form of a *tea*. Half an ounce of it may be boiled for an hour or two in a pint of water. *Dose*, half a wineglassful, two or three times daily.

Quinine.—What is commonly so called and used in medicine is the *sulphate of quinia*. The alkaloid quinia is the most valuable of several obtained from Peruvian bark; that is, the bark of different species of cinchona tree.

Quinine is a bitter tonic, but not a *stomach* tonic only; it acts decidedly, also, on the nervous system. When this is

debilitated, it will do as much good as any medicine, unless in cases where *iron* or *strychnia* is suitable, to improve its tone. But the heroic value of quinine is in the treatment of malarial fevers; that is, *intermittent*, *remittent*, and *pernicious* (or congestive) fevers. All of these prevail most in the autumn, although considerably also in the spring of the year. All of them are characterized by *periodicity;* that is, more or less regular *spells*, following each other at intervals or periods. *Chills* occur either once a day, or every other day, or on the first or fourth days; sometimes, only once in seven days. Each chill, also, is followed by a fever, and that by a sweat. *Remittent* fever does not go off during the interval, but only remits its violence; hence its name.

So marked is the power of Peruvian bark and its alkaloids, especially quinia, to *stop chills*, and to *cure remittent fever*, that it may be well called a specific remedy, even an *antidote* for them.

Dose of quinine, as a simple tonic in cases of weakness, one or two grains every four hours, until from six to eight grains are taken daily. The form of *pills* is most convenient for this use; one-grain or two-grain pills. For the cure of *intermittent* (chills, ague), more is needed; from twelve to fifteen grains daily for about three days, and then lessening gradually, to ten, eight, and six grains a day, continuing the latter for two weeks. In *pernicious* intermittent, in the Southern States, yet larger doses are required. *Remittent* fever needs the knowledge and judgment of a physician to deal safely with it.

Cinchonia (sulphate) agrees with some persons better than quinine. The latter, in doses amounting to over eight grains daily, makes many people's *ears ring*, or hum, or roar. Cinchonia hardly ever does this; at least, in moderate doses. Quinidia and cinchonidia also suit certain patients the best.

The popular idea that *quinine* injures the health, especially when long taken, is entirely mistaken. If prescribed only in ordinary doses (not more than fifteen or twenty grains in twenty-four hours), it does no harm, and, in malarial cases, may often save life, as well as shorten the time of sickness very much. In *over-doses*, it may cause temporary, or possibly permanent deafness. *Extreme* doses might even kill, by poisonous action on the brain; but such amounts are never given by physicians. I have known quinine to be taken, as much as from six to eight, or occasionally ten, grains daily, by a delicate person, for years together with good action as a tonic, and no disadvantage.

Quinine may be taken in malarial cases, whether there be *fever* or not; for example, in periodic attacks of *neuralgia*. Other diseases, also, in certain localities, take on the periodic form: but for these we must refer to larger medical works.

Rhatany.—This is the root of *krameria*, a South American shrub. It is astringent; its *tincture* is the best preparation. *Dose*, a teaspoonful, in water. Used especially for diarrhœa.

Rhubarb.—The root of an Asiatic and European plant, is a gentle purgative, with

RHUBARB (RHEUM PALMATUM).

also some tonic property, which makes it especially adapted to *dyspeptic* persons, and others disposed to *constipation*. *Dose*, for such a use, from three to six or eight grains. Many people buy the root in pieces, as it comes in the shops, and cut off daily what, on trial, they find to suffice for them. Less trouble attends the use of *simple rhubarb pills;* one or more as may be necessary; if only one, bedtime will be the best time to take it; if two, one at night and one in the morning.

Compound rhubarb pills contain also *scammony* and *aloes* (both strong cathartics),

as well as *myrrh*. They are at least twice as active as simple rhubarb pills.

Simple syrup of rhubarb is a very good opening medicine for infants. *Dose*, for a babe, about a teaspoonful.

Spiced syrup of rhubarb is one of the oftenest useful of all domestic medicines. It contains, besides rhubarb, *cloves*, *cinnamon*, *nutmeg*, alcohol, sugar and water. It is therefore aromatic and gently stimulant, as well as promotive of action of the bowels. This last effect, that of a purgative, is so slight, that it is generally useful in correcting irregular intestinal secretion, and thus curing *diarrhœa*, if given at an early stage. It is also very relieving to *colicky pain* with diarrhœa; and is an excellent "vehicle" with which to mix other medicines of nasty taste, as castor-oil; or those which do not readily dissolve in pure water.

The *dose* of spiced syrup of rhubarb is from a teaspoonful to a tablespoonful; not as a purgative, for which effect the *simple* syrup of rhubarb is better; but to *correct* and *relieve diarrhœa*, especially when accompanied with *pain*, at an early stage.

Rochelle Salts: *Tartrate of sodium* and *potassium*. A not very disagreeable, moderately active, purgative medicine; one of the most convenient and suitable at the beginning of an inflammatory or febrile illness; such as *bronchitis*, *pneumonia*, *measles*, *scarlet fever*, *remittent fever*, etc. *Dose*, from a teaspoonful to a tablespoonful, dissolved in a fourth or a third part of a tumblerful of water.

Santonin.—One of the most effectual vermifuges; that is, medicines which either kill or drive out worms. It must be used with care, as excessive doses are violent in their action; we may say poisonous. For *lumbricord* worms, the commonest kind, one grain will be a dose for an adult; a quarter of a grain, or less for a child. For *seat-worms* (those small ones which inhabit the lower bowel; and cause annoying itching of the *anus* or outlet) suppositories of santonin are the best remedy. These are made of cocoa butter, with two or three grains of *santonin* in each; one being inserted into the bowel at bedtime.

Sassafras Pith.—A very soft material, which gives a soothing (demulcent) property to water in which it is placed. It is often used in this way for *inflammation of the eyes*.

Seidlitz Powders.—Made by mixing bicarbonate of sodium, and tartrate of potassium and sodium (rochelle salt), in powder together, for one paper. For another paper, tartaric acid is put up, in proportionate quantity. When administered, each powder is dissolved in water, and the two solutions are poured together. It is a mild but prompt effervescing purgative, much in use before the invention of the effervescing solution of citrate of magnesium. Each *saline* powder contains forty grains of bicarbonate of sodium (soda) and two drachms of Rochelle salt. Each *acid* powder consists of thirty-five grains of tartaric acid.

Senna.—The leaves of an Eastern plant; an active purgative, with a disposition to give some griping pain in its operation. This may be prevented by adding fennel seed (*an aromatic*) or oil of fennel to it when given.

Fluid extract of senna is a neat and not very unpleasant preparation; with a drop of oil of fennel to each ounce, it is a very good laxative for infants or older children. Fluid extract of spigelia and senna has been mentioned already.

Slippery-Elm Bark has a demulcent property which makes it soothing to an inflamed or irritated part of the body; in *erysipelas*, for example. It is rather heavy to the stomach for internal use to advantage.

Soap.—*Castile* soap is the kind preferred when nicety is particularly desired. This is used by some people to clean their teeth. It is an ingredient, also, in some *purgative pills*, and is commonly employed for laxative *suppositories*, and to make warm *suds* for *opening injections*.

A lather of soap, made as for shaving, and applied with a shaving-brush, is one of the most relieving applications for itching; for example, in poison-vine eruption, or other affections of the skin.

Soap Liniment.—*Camphorated tincture* of *soap*. An excellent bathing material, so-called; that is, for rubbing a part, to warm and stimulate the movement of blood at and near the surface. It is good for sore-throat, sprains, etc., in this way.

Soda,—*Bicarbonate of sodium* is the chemical name of the article which is used in baking and washing, as well as in medicine. It is an excellent and not disagreeable antacid, relieving sourness of stomach, and often nausea (sickness of stomach) better than anything else. For such a use it may be taken, in small quantities. What would cover a little finger nail, if it would hold it—a *pinch* we may say—is an ordinary antacid dose, although twice as much may be taken for a single time. It is often prescribed by physicians for *gravel*.

Soda water, or mineral water, has no soda in it, but is made by forcing into common water carbonic acid gas, given off by the bicarbonate of sodium in solution, upon the addition of an acid to it, as sulphuric or chlorohydric acid.

Spice-Plasters.—When a child's stomach is sick, or it is obstinately colicky, one of the most helpful things is a spice-plaster. Take of ginger, cinnamon, and cloves, all powdered, each one or two teaspoonfuls; of wheat flour, the same amount. Mix all up together on a hot plate, with enough whiskey or brandy to make a pasty mass. Spread this (not too thickly, on account of its weight) on a piece of thin flannel, with the edges turned in over it all round. When applied to the abdomen (it had better be large enough to cover the whole belly), it should have laid over it a piece of oiled silk, to prevent evaporation. Then it can stay on several hours, and, when dry, may be freshened up again by adding a litle more brandy or whiskey.

Like the spice-plaster in action, is the application of a piece of flannel wet with *essence of ginger*, and covered with oiled silk. This will be somewhat more irritating to the skin of young and delicate children than the spice-plaster.

Squills,—The bulb of an onion-like plant, of which the *syrup* is most used. It is an excellent cough-medicine (expectorant); rather less loosening than ipecac., and therefore suited to a later stage in a bronchial attack. *Dose*, from a half-teaspoonful to a teaspoonful. This syrup should be in every medicine-chest.

In pill, squill is often given as a diuretic (increasing the flow of urine). Dose for this use, one or two grains, three times daily.

Staphysagria.—Stavesacre. A drug used in powder as an effective *parasiticide;* especially to destroy the eggs or "nits" of lice.

Sulphide of Calcium, in quarter-grain doses or less, has the confidence of many physicians as a remedy for *boils*, when one boil keeps following another. A fresh-made solution, of one grain in a pint of water will answer; two teaspoonfuls being taken every hour or two for a few days at a time. *Sulphite of sodium*, in doses of from five to fifteen grains, does good in some cases of indigestion, and perhaps in some of boils or carbuncles.

Sulphur.—This is a mild and good laxative; particularly suitable for piles, and for those persons who are often troubled with colic. *Dose*, a teaspoonful; in molasses or milk. In recent cases of *skin-disease*, it is often given with an equal quantity of *cream of tartar*.

Externally, sulphur is *the* specific remedy for itch; not the only one, but the most convenient and frequently used. It is applied in the form of *ointment*, rubbed well into the seat of the eruption, where it kills the *acarus* or itch-mite, which keeps up the disease.

Sulphur, when burned, gives off fumes of *sulphurous acid*, which is a potent disinfectant. A pound or two of it burned in a large room (with all the people out of it, of course, as the gas cannot be breathed), with the doors and windows closed for two or three hours, will do more to purify it of any contagion or infection than anything else that can be done.

Sulphuric acid, in its pure state, is not used in medicine. *Aromatic* sulphuric acid is the *elixir of vitriol*. This is a good appetizer in ten- or twelve-drop doses, in water. It is also sometimes given for *diarrhœa;* and has some reputation as one of the remedies for *epidemic cholera*. A drink made of it is recommended to workers in lead or lead paint, to prevent the poisonous action of that metal; as the sulphate of lead (compound of lead with sulphuric acid)

is insoluble in water, and without much if any poisonous influence upon the body.

Suppositories are small, soft solids, made for introduction into the lower bowel. Brown soap is sometimes so used instead of an opening injection (enema). A piece of it or of castile soap may be cut of about the size and shape of the last joint of the little finger, and dipped in oil (castor-oil or sweet-oil) for easy introduction. It must be pressed upwards gently until fully within the bowel, and retained for a little while by the contraction of the muscle at the outlet (*sphincter ani* muscle of anatomists).

Cocoa Butter is a very common and convenient material for suppositories, with which are mixed medicinal agents so to be used. *Opium* may be employed, the dose being twice as large as when taken by the mouth. A suppository may therefore contain two grains of opium. *Santonin* suppositories (with three grains of this drug in each) may be used with great advantage for *seat-worms*.

Tannin or **Tannic Acid.**—This is the astringent principle of oak bark, of nut galls, and of many other vegetable materials. Its presence in tea-leaves accounts for iron spoons being blackened when left in tea. Catechu and other vegetable astringent medicines contain tannic acid, some of them also the very similar gallic acid.

Tannin is often given as a medicine in pill for *diarrhœa* and for *hemorrhages*. A good astringent pill is made with three grains of tannin and a little opium, from one-twelfth to one-half a grain of the latter, according to the case.

Tannin is also frequently made part of an astringent *gargle*, particularly in rather *chronic* (prolonged) cases of sore throat.

Tar.—An old-time remedy for *chronic bronchial* trouble; especially likely to do good by *inhalation*. A tin cup containing tar may be kept over a slow flame, in the room with the invalid, so as to give off tar vapor into the air. A good way is to have the cup of tar in a vessel of hot water; the heat acting upon the water, so that it never heats the tar so much as to decompose it. Or it may be used with a simple inhaler. (See Inhalation).

Tar Ointment is a valuable preparation in some *skin diseases*. It will generally cure *ringworm*. For this purpose, it should be rubbed gently but thoroughly over the ringworm at night (the part being, if practicable, then covered with a soft rag, over which is oiled silk), and cleaned off carefully with warm water and castile soap in the morning.

Taraxacum.—Everybody knows the dandelion plant. *Taraxacum dens leonis* is its botanical name. The leaves are liked by some people as a kind of "greens" for the table. The root has long been known, when chewed or drunk in the form of a tea, to act upon the kidneys, increasing the flow of water. Besides this diuretic action, it appears also to aid in relieving torpor of the liver.

Extract of taraxacum is the most convenient preparation. In ten- or twenty-grain does it may be taken by those who have symptoms threatening bilious colic, or who, from nausea, dizziness, a bitter taste, and yellow eyes and tongue, appear to suffer from imperfect removal of bile from the system. It is thus a mild and safe assistant to, or perhaps substitute for, blue mass.

Tarrant's Powders.—A moderately active and not unpleasant cooling purgative. Dose, from a teaspoonful to a tablespoonful, according to the amount of effect desired.

Tartar Emetic.—A very harsh drug in its effects upon the human body, unless it be given in very small doses. Other emetics are always to be preferred when vomiting is to be produced. Its greatest value is in small doses as a sedative and expectorant in highly inflammatory cases of pneumonia or acute bronchitis. From one-sixteenth to one-fourth of a grain for an adult will be enough, every two or three hours. For children, tartar emetic is too prostrating to be used unless for quite exceptional reasons. Coxe's hive syrup, formerly a common medicine for croup, should be excluded from the family medicine-chest, on account of its containing tartar emetic. *Antimonial wine* is open to the same objection; *wine of ipecac.* is similar in effect, but much safer.

Tartar emetic *ointment* is occasionally employed as a powerful counter-irritant,

applied to the chest or spine. It causes a sore pustular eruption, more severe even than that made by croton oil used in the same way.

Turpentine, Oil or Spirit of.—Used occasionally by physicians as a medicine internally, in ten-drop doses, in *typhoid fever* (as an alternative to the diseased bowel) and in *chronic rheumatism;* in larger quantities, even a teaspoonful or more, in cases of *tapeworm*, and as an antidote for *phosphorus poisoning*. Oil of turpentine is very heating, and had better not be taken internally without medical advice.

Externally, it is a good warming application (half and half with sweet oil, if the skin of the patient be delicate) for *sore throat*, pain in the *side* or *back*, etc. It may cause some soreness and a slight eruption, which, however, will soon pass away.

Valerian.—The root of an herb native to the Old World, of which the *tincture* and *fluid extract* are most used. It is a mild nervous stimulant and antispasmodic (composing agent). In *hysterical* cases, and in some cases of *delirium tremens*, it is very serviceable. *Dose* of the tincture, a teaspoonful; of the fluid extract, the same; either being diluted with water when taken.

Valerianate or **Ammonia** is often given, in the form of an *elixir*, in teaspoonful doses, to promote sleep in cases of restlessness at night. Valerianate of zinc is a nerve-tonic; sometimes prescribed by physicians, in one-grain doses, for *epilepsy*.

Vichy Water.—An alkaline (antacid) mineral water of France, more agreeable because of its containing some free carbonic acid gas. It is recommended for *dyspepsia* with sour stomach; for *gravel*, and for *gout;* especially when the last named affects the stomach and digestion. *Vichy lozenges* are sold by apothecaries, being intended to imitate vichy water when dissolved. They are often found serviceable to persons subject to sourness of stomach after eating.

Warner's Cordial.—*Tincture of Rhubarb and Senna* this is, by composition. It is a warming, stimulating laxative to the bowels; good in *gouty* cases, and many others. *Dose*, one or two teaspoonfuls, in water.

Watermelon-Seed Tea is an old remedy for dropsy. It is a diuretic, of considerable power, and quite safe, if it does not always cure. A couple of tablespoonfuls of the seeds may be infused in a pint of hot water, and left covered for an hour or two. It is least disagreeable when taken cold; *dose*, a wineglassful (or less, if the stomach be weak) three or four times a day.

Wild Cherry Bark.—One of our native American medicines, of real value. Like the fruit and leaves of the wild cherry tree, and like peach leaves and fruit-stones, this bark contains principles which, when water is added, make a small quantity of Prussic (Cyanohydric or Hydrocyanic) Acid. This is a decided sedative to the blood-circulation, while wild cherry bark has also somewhat of the tonic property which is more largely possessed by the vegetable *bitters*. It is, therefore, a *sedative tonic*. It is adapted to cases of *bronchial* inflammation, especially in rather feeble persons. I have known it to do good even in *consumption of the lungs*. A *cold infusion* (tea) may be made by soaking pieces of the bark in cold water over night. This may be drunk freely, so long as the stomach is not oppressed by it. But more convenient are the *syrup* and *fluid extract* of wild cherry bark. The *syrup* is an excellent cough-medicine, at any stage of a cough, having a particularly soothing and quieting influence upon the air-passages. It may be taken at first with syrup of ipecac., to loosen the cough; then with syrup of squills, to hasten the cure; and afterward, if need be, when it is well loosened and yet troublesome, with a little paregoric also. *Dose*, a teaspoonful. Much more at a time will sicken some persons.

Wistar's Lozenges. These are made of liquorice, gum-arabic, sugar, oil of anise, and a little opium. They are very quieting to a cough, but, as opium tends to check expectoration, they are not suitable for the early, tight stage; their time is when cough is loosened thoroughly, but is annoying and interferes with sleep at night. From one to four lozenges may be dissolved slowly in the mouth in the course of a night if required.

Many more drugs might be here named, and their properties and uses described. But I think it best to confine our attention to those best tried and known to the medical profession. Others may be read about in medical works.

DOSES OF PRINCIPAL MEDICINES

Acetate of Ammonium Solution	1 Tablespoonful.
Aromatic Spirit of Ammonia	10 to 30 Drops.
Assafœtida, in Pill	3 to 5 Grains.
Assafœtida, Milk	Teaspoonful to Tablespoonful.
Blue Pill	¼ Grain to 3 Grains.
Bromide of Potassium or Sodium	5 to 20 Grains.
Cajuput Oil	4 to 8 Drops.
Calomel	$\frac{1}{12}$ Grain to 2 or 3 Grains.
Camphor, Spirit	10 to 30 Drops.
Camphor Water	Teaspoonful to Tablespoonful.
Cardamom, Compound Tincture	1 Teaspoonful.
Castor-Oil	Teaspoonful to Tablespoonful.
Catechu, Tincture	Half-Teaspoonful to Tablespoonful.
Cathartic Pills, Compound	1 Pill.
Chalk Mixture	Teaspoonful to Tablespoonful.
Chloral Hydrate	5 to 30 Grains.
Chlorate of Potassium	5 to 20 Grains.
Chloride of Ammonium (Muriate of Ammonia)	5 to 20 Grains.
Chloroform, *internally*	5 to 50 Drops.
Cinchona, Sulphate	2 to 3 Grains.
Citrate of Magnesia, Solution	1 or 2 Wineglassfuls.
Citrate of Magnesia, Granulated	Teaspoonful to Tablespoonful.
Cod-Liver Oil	1 Tablespoonful.
Colchicum, Wine of Root	10 to 20 drops.
Cream of Tartar	Teaspoonful to Tablespoonful.
Creasote	1 Drop.
Croton Oil, *internally*	¼ Drop.
Digitalis, Tincture	10 to 15 Drops.
Dover's Powders	10 Grains, at night.
Elaterium	$\frac{1}{16}$ of a Grain.
Elixir of Vitriol	10 to 15 Drops.
Elixir Proprietatis	1 or 2 Teaspoonfuls.
Epsom Salts	Teaspoonful to Tablespoonful.
Ergot, Wine of	Half-Teaspoonful to 2 Teaspoonfuls.
Gentian, Compound Tincture	1 or 2 Teaspoonfuls.
Ginger, Essence of	10 to 30 Drops.
Glycerin, *internally*	1 or 2 Teaspoonfuls.
Hoffman's Anodyne	1 or 2 Teaspoonfuls.
Hops, Tincture of	1 or 2 Teaspoonfuls.
Hunyadi Janos Water	1 Wineglassful.
Huxham's Tincture	1 Teaspoonful.
Iodide of Potassium	5 to 10 Grains.
Iodine, Lugol's Solution	10 to 15 Drops.

Iodoform, *internally*	1 Grain.
Ipecacuanha, Syrup or Wine	10 Drops to 1 Teaspoonful.
Iron, Pill of Carbonate (Vallet's)	3 to 5 Grains.
Iron, Tincture of Chloride	10 to 20 Drops.
Jalap	5 to 10 Grains.
Lactucarium, Syrup	1 or 2 Teaspoonfuls.
Laudanum	10 to 30 Drops.
Lavender, Compound Spirit	1 or 2 Teaspoonfuls.
Lime-water	Dessertspoonful to Tablespoonful.
Lobelia, Tincture	20 Drops to a Teaspoonful.
Lupulin, Tincture of	1 or 2 Teaspoonfuls.
Magnesia, Calcined	1 Teaspoonful.
Morphia, Magendie's Solution	4 or 5 Drops.
Morphia, Solution	1 Teaspoonful.
Musk	3 to 5 Grains.
Nux Vomica, Extract	¼ to ½ Grain.
Nux Vomica, Tincture	10 to 20 Drops.
Opium	1 Grain.
Paregoric	1 Teaspoonful.
Peppermint, Essence	1 to 10 Drops.
Permanganate of Potassium, *internally*	1 or 2 Grains.
Pink Root, Fluid Extract	1 Teaspoonful.
Pink Root and Senna, Extract	1 Teaspoonful.
Podophyllin	¼ Grain.
Püllna Water	1 Tablespoonful.
Quinine	1 or 2 Grains.
Rochelle Salt	Teaspoonful to Tablespoonful.
Rhubarb, in Pill	3 to 5 Grains.
Rhubarb, Simple Syrup	Teaspoonful to Tablespoonful.
Rhubarb, Spiced Syrup	Teaspoonful to Tablespoonful.
Santonin	1 to 3 Grains.
Senna, Fluid Extract	Teaspoonful to Tablespoonful.
Soda, Bicarbonate	2 to 20 Grains.
Squills, Syrup	Half Teaspoonful to Teaspoonful.
Tannic Acid	3 Grains.
Taraxacum, Extract	10 to 20 Grains.
Tarrant's Powders	Teaspoonful to Tablespoonful.
Veratrum Viride, Tincture	3 to 6 Drops.
Warner's Cordial	1 or 2 Teaspoonfuls.
Wild Cherry Bark. Syrup	1 Teaspoonful.
Wild Cherry Bark, Fluid Extract	1 Teaspoonful.

The doses here given are intended, as a rule for adults.

As a guide for the giving of medicines to patients in general we append the following:

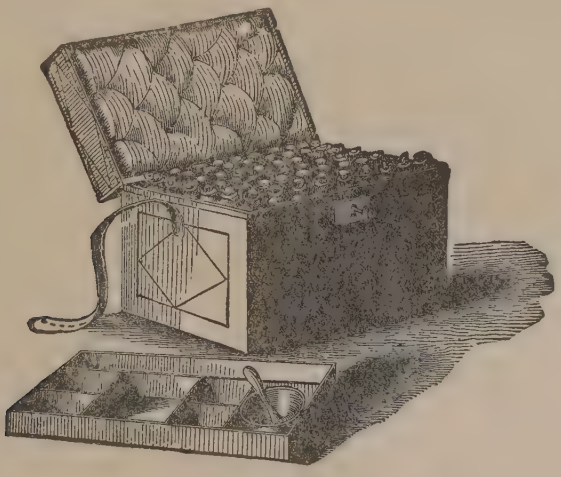
Table of Proportionate Doses.

Age, years	80	65	50	25–40	20	16	12	8	5	2
Doses	⅝	¾	⅞	1	⅞	¾	⅝	½	⅜	¼
Age, months							12	6	2	1
Doses							1-5	1-8	1-15	1-24

Largest Safe Doses of Poisonous Drugs.

Every person should know the largest doses, which is safe to take, of active medicines. The following table shows the largest doses admissible, in grammes, and also the equivalent in grains for solids, and in minims for liquids. The doses are expressed in fractions, thus: 1-13, 1-64, meaning one-thirteenth, one-sixty-fourth. In non-professional hands it is the safest plan to strictly observe the rule of never giving the maximum dose of any medicine:

Medicines.	Grammes.	Grains.
Arsenious Acid	.005	1-13
Acid, Carbolic	.05	¾
" Hydrocyanic	.06	1
Aconita	.0041	1-16
Aconite Root	.15	2¼
Arsenic, Iodide	.025	⅜
Atropia	.001	1-64
Atropia Sulph	.001	1-64
Barium, Chlor	.12	1-64
Belladonna, Herb	.2	3
" Root	.1	1½
Codia	.05	¾
Conia	.001	1-64
Digitalis	.3	4½
Ext Aconite Leaves	.1	1½
" " Root	.025	⅜
" Belladonna	.1	1½
" Cannabis Indica	.1	1½
" Conium	.18	2¾
" Digitalis	.2	3
" Nux Vomica, Alc	.05	¾
Ext. Opium	.1	1½
" Stramon, Seed	.05	¾
Fowler's Solution	.4	6 min,
Lead, Sugar of	.06	9-10
Mercury, Corrosive Chlor	.03	9-20
" Red Iodide	.03	9-20
Morphia and its Salts	.03	9-20
Nitrate Silver	.03	9-20
Oil, Croton	.06	9 10
Opium	.15	2¼
Phosphorus	.015	2-9
Potassa, Arsenite	.005	1-13
" Cyanide	.03	9-20
Santonine	.1	1½
Soda, Arsenite	.005	1-13
Strychnia and Salts	.01	1-6
Tartar Emetic	.2	3
Veratria	.005	1.13
Veratrum Viride	.3	4½
Zinc, Chloride	.015	2-9
" Valeriante	.06	9-10



MEDICINE CHEST.

For the Medicine Chest.

The following household remedies are suggested for the family medicine chest:

Castor-Oil, Essence of Ginger, Spiced Syrup of Rhubarb, Simple Syrup of Rhubarb, Camphor-water, Lime-water, Cinnamon-water, Paregoric, Spirits of Camphor, Spirits of Hartshorn, Laudanum, Syrup of Ipecacuanha, Syrup of Squills, Sweet Spirits of Nitre, Hoffmann's Anodyne, Chalk Mixture Powder, Compound Spirits of Lavender, Anodyne Carminative (Cholera Mixture,) Tincture of Arnica, Soap Liniment, Essence of Peppermint, Spirits of Turpentine, Collodion, Aromatic Spirits of Ammonia, Tincture of Capsicum, Aromatic Sulphuric Acid, Wine of Colchicum, Glycerine.

In many kinds of illness, especially continued fevers, and other attacks attended by great debility, good nursing is well known to be as important as good doctoring. A careful physician will direct not only the medicines of the patient, but also his food, and all other matters concerning him—as his covering, changes of clothing, air in his room, etc. But the carrying out of such directions must be left to those immediately in charge of the sick person from hour to hour; and questions will occur in the doctor's absence, sometimes of much importance, which those who nurse the patient must answer and act upon at the moment, from their own knowledge. Moreover, the *manner* of doing things in the care of a sick person makes an immense difference in his comfort. In critical cases it may even decide between recovery and death.

Qualities of a Good Nurse.

What are the qualities that make a good nurse? They are kindness, good common sense, carefulness, quietness, neatness, handiness, cheerfulness.

Kind a nurse must be, or mere professional skill and obligation will fail to effect all that is needed for the best welfare of a patient. Sympathy is worth much to a sufferer. *Patience* is often called for in attendance upon the sick, and selfish people do not have a large stock of this, which can not be bought with money; it must come from love, or, at least, from genuine kindness of heart.

Common sense, that is, intelligence such as most people, not particularly deficient, possess, will enable any one to *learn* what is necessary in nursing, and to do it respectably, at least.

Carefulness is indispensable. One who will give a dose of medicine without looking at the label on the bottle; or will spill out twenty drops when ten were ordered; or will upset a breakfast tray on the bed; or leave a vessel under the bed for hours uncovered; or oversleep when the patient should have food or medicine, or let the fire go out; such an one is entirely unfit to have charge of a sick person.

Exactness in carrying out the orders of the physician is the *first duty* of a nurse. The doctor is responsible for the treatment of the case, and the patient and family are responsible for the choice of the doctor. The nurse, whether man or woman, who thinks he or she "knows better than the doctor," is a very dangerous and unsuitable person to have about the house.

Sleeping heavily is a weakness from which some suffer when in care of ill patients at night. It is a good thing to learn to wake with a sound or a touch. By fixing it strongly on the mind, most people can do this. A break-down may come, just at a critical moment, then the family is left under a calamity which might have been prevented by proper consideration from the start.

Watchfulness in everything is the duty of a nurse. Without it, a patient may get out of bed in a delirium, and perhaps fall down stairs or out of the window. Or, the clothing may be thrown off, and a deadly chill will follow. In a thousand things the life of the sufferer may be in the hands of the nurse, as the safety of the passengers and cargo of a ship is in that of the pilot at the helm.

When many doses of medicine or portions of food have to be given through the day and night, it is best that the times and quantities shall be *written down*, instead of trusting to memory. And then, a mark of record of some kind being made when each thing *is* given makes ready a report of the treatment for the doctor to see when he comes.

Quietness is very necessary in the sick-room. Stamping around in heavy or creaking shoes, talking loud, swinging in a rocking-chair, slamming doors or windows, or even much rustling of garments; *all noises* are utterly inadmissible and injurious. Yet *whispering*, and creeping on tiptoe in sight of the patient, are about as bad, because they attract his attention unpleasantly, and that is always to be avoided.

Never ask a patient whether he would "like to eat or drink" such-and-such a thing. Prepare and bring, under the directions of the doctor, what will be best and most likely to be taken, and offer it quietly.

If not taken in a little while, remove it out of sight. *Keep no food or medicine in sight of a sick person.*

Neatness is a very similar quality to quietness. Nothing should be allowed to be slovenly, much less dirty around a sick person. Yet "fuss" and much movement in clearing up are to be avoided. A wet cloth will be better than a brush or broom in cleaning furniture and carpet.

Handiness is an excellent quality in doing all sorts of things, in the sick-room, as well as everywhere else. While it is not absolutely indispensable, its opposite, clumsiness or awkwardness, may cause much discomfort. I have known one or two men who, in a surgical ward of a hospital, could hardly go near to a patient without somehow hurting him.

Cheerfulness is an excellent attribute in the sick-room. It is as pleasant as sunshine, and wholesome like it, without any of its glare. A long face or a whining voice should never enter where there is suffering enough already. Let every one endeavor to make the best of all things, and the most of hope. When there is doubt, leaning toward the brighter side is well; as the proverb says, "while there is life there is hope,"

Speaking of a patient's symptoms in his presence (unless when needful questions have to be asked) is to be avoided. Also, there must be no discussion or mention there of other people's illnesses or deaths. *Much talking of any kind* is out of place in the sick-chamber; it interferes with that rest of brain which, in all kinds of illness, is important.

The Sick-Room.

When it is possible to choose, the patient's room should be on the sunny side of the house, and on the second floor. It should be one of the largest in the house. If a room is necessarily small, more contrivance will be required to meet all the conditions wanted in the care of an ill person.

Plenty of large windows are desirable in a sick-room. Should there unfortunately be only one window, it will be almost impossible to air the room properly, unless there be an open transom over the door, or the door be left open most of the time. When two rooms communicate, one of them may with advantage be given up to the patient, and the other to the nurse and to various appliances, which may thus be kept out of the sick one's sight.

There should be little furniture in the sick-room. A few chairs and tables will suffice, one being a bedside table for frequent use. A bed-chair (night-chair) or portable earth-closet will be very serviceable for a person who is strong enough to get or be helped out of bed. No carpet should be on the floor, except movable pieces or rugs, placed where they are needed for warmth to the feet and to prevent noise in moving about.

No bed-curtains should be allowed; nor heavy window-curtains. Good blinds or shades are needful to regulate the admission or exclusion of light.

Warmth.

A sick-room should, generally, be kept at a temperature betwen 68° and 70° Fahr. In a few exceptional cases, physicians may wish to have a room much warmer, at particular times. When fuel is scarce, and the room is small, it will be best to secure good air to breathe, even at the loss of some degrees of temperature in the room, this being made up by sufficient covering for the patient. But, in most instances, air may be, with care, kept pure and sufficiently warm at the same time.

The best kind of fire for a sick-room is an open wood fire in the chimney-place. Next to that is an open coal-grate, with a *good draught* to secure it from escape of gas. If only a stove can be had, a wood-burning stove should be preferred. With a stove which burns coal, the greatest care will be necessary to prevent coal-gas from getting out into the room, and also to keep the air moist enough by having water in a pan always upon the stove.

Furnace-heated air is objectionable as a dependence in a sick-room, although very well to have within reach to supplement an open fire. The warmth of most furnaces is variable and uncertain; some of them allow gas to get into their air-chambers, and so to pass through the house; and, at the best, they require special pains to provide

ventilation, which the heater itself does not furnish.

For the body of a sick patient to be kept warm enough to be comfortable, is one of the quite indispensable things. It should be ascertained from time to time, especially about the feet. Blankets and quilts will not always insure warmth; they only protect it when the body has it of itself. *Whenever a sick person's feet are cold, something warm should be at once put to them.* A heated fire-stone, or a common brick, or a bottle, or pan of hot water, or a bag of hot salt, will do. Only never let your patient be chilled, for a single minute, when it can be helped.

Light.

While the sunny side of the house is the best, and sunlight should be admitted (with few exceptions only) every day into the room, the sick person's eyes should not be exposed to a direct glare. The bed may be so turned that the window is out of the patient's sight; or, if this cannot be, a screen of some kind should be so placed as to shield his eyes from it. At times, when sleep is desirable, the light should be almost all shut out. At night, no flame of a lamp, candle, or gas-burner should be exposed to the patient's view. Either should be shaded, or otherwise concealed. A gas-burner may, of course, be turned down; and, besides, a movable tin burner-shade attached to it is a great convenience. Some persons, even when well, cannot sleep with the flame of ever so low-turned a gas-burner in their sight. It is not safe, moreover, to turn a gas-burner very low. A change of pressure at the source of supply may put out the light, and allow a leakage of gas, dangerous to any one sleeping in the room.

Air.

In the sick-room the things to be done are, to have the air changed constantly, and at the same time to prevent direct draughts upon the patient's bed. If there are several windows, all but the one nearest the bed may be open a little at top and a little at bottom; more or less according to the weather. In warm weather, of course, everything may be opened wide all the time.

With only one window in a room, as already said, there ought to be another outlet for air, such as a transom over a door; or, in the absence of this, the door itself may be left open. This will require attention to the air of the room, or passage, communicating by that door with the room. If the air of the house is foul, that will hurt the condition of the sick-room, when the door of the latter is left open. Yet, somehow, both an *inlet* and an *outlet* are needed, to change the air of the room.

In very cold weather, when it is impossible safely to have (as is always best) a constant and considerable movement of air through the room, the next best thing will be to have chosen *times* of airing it thoroughly. Cover the patient with extra blankets or coverlids, protecting even the head and face for the time; and then open the window or windows and doors wide *for a few minutes*. Upon closing them, see that the patient keeps his extra cover until the room is warm enough again.

The Sick-Bed.

Select a wide and rather low bedstead, for ease in getting in and out; a wire bed-bottom; next best to it, one on good springs, with a thick but soft mattress. No curtains should be placed around the bed, since they check the free and abundant supply of air to the patient.

Pillows should be of full size, and as soft as possible. Extra little pillows are often useful, to put in spaces, in propping a patient up, to relieve some particular pressure. A sheet, as a rule, not a blanket, should be next to the body. The blanket first is only proper when the patient is very hard to keep warm, or when one quite ill is lifted into and out of a bath. A down quilt is the nicest top-piece; its lightness is a great advantage. Some patients can hardly beat the pressure of the bedclothes. Over an inflamed or injured limb, it is often necessary to put a support to keep them off. This may be made by breaking a barrel-hoop in two, and placing the pieces across each other (fastened at the middle for steadiness) under the clothes.

Changing the bedclothes requires care, but it ought to be done often. When there

is likely to be anything to soil the bed, a large piece of rubber-cloth or oil-cloth should be put upon the mattress, beneath the under sheet. In cases of labor, a second rubber-cloth or oil-cloth had better be placed upon the lower sheet, and another sheet over it, so that the latter and the upper rubber-cloth may be removed, leaving the bed still protected.

AIR- OR WATER CUSHIONS.

Sheets, especially, ought to be changed often. When practicable, once in twenty-four hours will be desirable in a severe illness. To make the change, warm a sheet thoroughly (being sure first that it is *entirely dry;* a damp sheet may be deadly), and fold it lengthwise. Then fold, also lengthwise, one side of the under-sheet on the bed, up against the patient's side. Push the fresh-warmed sheet along near him, and have some one to lift, first his head and shoulders, and afterwards his legs and feet. Then, while he is lifted, press the soiled sheet from under and beyond him, and roll out the fresh one (half of it) to take its place. It will then be easy to draw it smooth. To change the upper sheet, the fresh one, being first warmed, may be rolled either in its width or in its length, and passed *under* the sheet already over the patient's body, into its place, without disturbing him at all. It requires two persons, one on each side of the bed, to do this well.

BEDSORES are very troublesome occasional results of continued pressure, while one is lying long in bed; they are especially apt to occur in very thin and weak persons. Most of all they are liable to happen when, from an injury or serious disease of some part, the patient cannot change his position from time to time. This is the case with fractures of the thigh or leg. In such instances the utmost care must be taken to preserve the soundness of the skin where it is most pressed upon. It must be examined every day, and bathed gently with whiskey or soap liniment. When redness and tenderness of the skin begin to appear, a protection to it must be supplied, by covering the part with a piece of soft, thick buckskin, upon which *soap-plaster* has been smoothly spread; or, if that is not at hand, two layers of adhesive plaster, very *smoothly adjusted* to the surface, will do for the purpose. Small pillows, or air- or water-cushions, in rings or other shapes, are often employed to take the pressure off of tender parts. They may sometimes do good; but, in surgical practice, I have been repeatedly disappointed with them, especially with air- and water-cushions or pillows. When bedsores actually occur, is is *necessary* to relieve the sores from pressure; and, besides, they must be treated like open wounds or ulcers.

Sick-Garments.

These should be as simple as possible. One sufficiently warm and long night-shirt or night-gown will, as a rule, be enough; the less worn, the easier it will be to make changes. If the limbs incline to be cold, light drawers may be added; with the old and feeble, stockings also. Changes of garments worn constantly in bed should be frequent. One "robe" for the day and another for the night would be well, but for the fatigue of so many movements.

There should be no *exposure to cold* during such changes. There need be none, if the room is moderately warm at the time (70° Fahr.) and the fresh garment is well warmed near the bed. One arm should be taken out of the sleeve it is in, and put in the new one; then the old shirt should be lifted off over the head, and the new one put in its place; lastly, the other arm should be changed and the shirt drawn down. When a long gown is ready to put down over the head and shoulders, the old one can be drawn off at the feet.

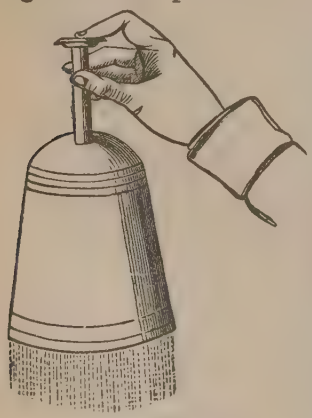
If any garment becomes soiled, it must be removed as soon as possible. There are,

or course, some states of extreme debility in which it is not safe to move the patient so often as above said. But, by having garments made loose, and cut or ripped if necessary to facilitate removal, the refreshment of such changes may be obtained in more cases of illness than many people suppose.

When the disease from which a patient suffers is *contagious*, as small-pox, scarlet fever, measles or typhus fever, every article of clothing worn, as well as the sheets, blankets and bedding, must be (for safety to others) either *boiled* or *burned*. In malignant cases, or those attended by much soiling of the clothes, they had better be burned. In other instances they may be thoroughly boiled, and then spread out in the sun to dry.

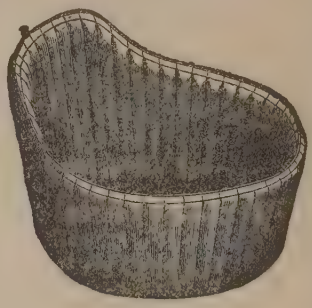
Washing and Bathing.

Every morning, at least, a sick person's face should be freshened up by washing, in whatever manner his strength best allows. One really ill must have it done by another person. A soft "wash-rag" may be used. The water may be cold, if there is fever, or if there is not prostration with a tendency to chilliness. In the latter case, warm water is better, even for the face. Warm should be used also to wash the arms and legs and other parts of the body. In weak conditions, whiskey may be added to warm water for bathing the limbs, and pure whiskey or soap liniment should be used to bathe any parts of the skin which are subject to pressure. This is often important to prevent *bed-sores*. If the skin is quite or almost broken, a piece of buckskin spread smoothly with soap-plaster, or a piece of elastic adhesive plaster, or even common adhesive plaster (two thicknesses) may be, as already said, put on to make an artificial protective cuticle.



A SIMPLE SHOWER-BATH.

When fever is hot and high, cool washing of the body is of great value. Some physicians now advise even *cold* baths for typhoid fever. I do not think well of this practice; unless, at all events, the patient is put in water which is at first warm or tepid, and cooled down gradually; also, without exposure to a low temperature for many minutes at a time. But *cool sponging*, in scarlet fever as well as in typhoid, is, without doubt, not only relieving but useful. It may be repeated two or three times daily.



HIP-BATH.

In cases of *low* fever, and other cases in which restlessness at night is a symptom, bathing the arms and legs (one at a time, so as not to chill by exposure) with whiskey and hot water (equal parts) often gives much comfort and promotes sleep.

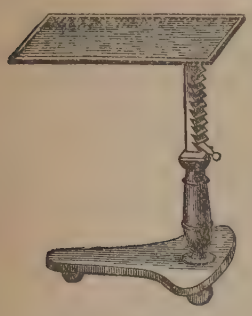
Warm baths are frequently beneficial in states of nervous excitement; as in the *convulsions* of children. Prolonged warm baths are also advised sometimes for *tetanus* (lock-jaw), and to promote the reduction of *hernia* (rupture). In spasmodic *croup* in children, a warm bath is often helpful. *Hot* baths do good in cold or depressed conditions of the system; as in *chronic rheumatism* or *neuralgia*; and when the eruption does not come out or stay out well in *scarlet fever*, *measles*, or *small-pox*.

Hot-air baths, sometimes called Russian baths, must be always taken with *dry* air, so as to allow of free perspiration and evaporation from the body. This so mitigates the effect of heat that many people can bear an air-bath above 200° without inconvenience.

Water-baths affect the body chiefly according to their temperature. They may be divided as follows: Cold, 32° to 70° F.; cool, 70° to 85° F.; tepid, 85° to 90° F.; warm, 90° to 96° F.; hot, 96° to 100° F.; vapor, 100° to 120° F.; hot air, 130° to 250° F.

FOOD FOR THE SICK

Appetite almost disappears in severe illness, especially when there is fever; and the capacity to digest food is then nearly lost. It is best not to give large quantities, but keep up the nourishment of the body by giving strong, concentrated food, in the liquid form, in small quantities, at short intervals.



BED-TABLE (WITH RACK)

A young and robust person may, at the beginning of an illness, be better for a day or two with almost no food. *Feeble* patients need, as a rule, to be so fed from the start.

The main staple article of diet for the sick is the same as for infants; namely, milk. And for the same reasons; that it contains all that is essential for the system, in a form easy of digestion and appropriation. In *typhoid fever*, for example, almost from the beginning, a patient may be fed with two tablespoonfuls of milk every two or three hours, day and night. Another concentrated article is beef-tea; and stronger yet, beef-essence. The mistake has been very often made of *straining* or *filtering* beef-tea, after it has been subjected to a boiling heat. Its most nourishing part is thus left behind. It ought to be brown with finely divided particles (not solid pieces, of course) of the meat. The same is true also of *essence* of beef, made without the addition of water.

Next to these articles of food come broths or teas of other meats; as *mutton* and *chicken soups*. They should, for the sick, be made strong, not watery; but should be thoroughly rid of their fat, by skimming. This can be most effectually done when they have stood and become cool; but, except in the warmest weather, they should be heated again to be taken.

Prepared extracts of beef are much in use, to save trouble in getting the fresh article; but try to get those that have not been filtered, as filtering takes out most of the *nourishing* part of the meat, and leaves rather a nutritive *stimulant* than a food.

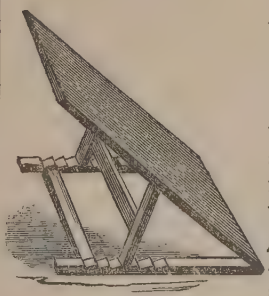
Any *standard beef-juice* which is prepared *without boiling*, has the substance of the beef in a very concentrated state. Most people can take this very well. Two teaspoonfuls of it may be added to about a quarter of a tumblerful of water (hot or cold, as preferred), this being given two tablespoonfuls, more or less, at a time.

Johnson's fluid beef is agreeable to some persons, and, when so, answers a very good purpose. To my taste, it is unpleasant. Many physicians recommend it, and use it largely. *Beef peptonoids* are much used.

Jellies are *weak* food; good only for variety, or to hold something stronger, as a matter of taste.

Fruits are commonly pleasant during fever, but they are most of them rather too hard to digest. *Malaga grapes* will almost always agree well. *Orange juice* (without swallowing the pulp) does so also, and is often very refreshing to the sick. *Lemonade* is pleasant and cooling, but requires consideration of the condition of the stomach and bowels at the time. One of the best things to *clean* a *foul tongue* during fever is *half a lemon*, passed slowly over it now and then.

Stimulants are often added to the diet of the sick, when patients are much prostrated or exhausted. Their use requires great caution and judgment. As a rule, they should not be employed without the advice of a physician. *Wine-whey* and *whisky-punch* are most frequently advised. They are most apt to be appropriate in *typhus fever*, in the weakest cases of *typhoid fever*, and in the *late stages* of severe acute diseases. Also, they may be called for in *cholera*, and in certain conditions which are met with in advanced or advancing *consumption of the lungs*.



BED-REST

Convalescence is generally attended by the return of a good appetite and digestive

power. The system has to make up for what it has lost during illness. Care is necessary that the patient does not venture too soon upon a varied diet, or the use of things hard of digestion. *After typhoid fever*, this is particularly necessary. From the special condition of the intestinal canal in that disease, life may be endangered at that time by a single imprudence in diet. Gradually, however, after most diseases, recovery is marked by ability to eat all ordinary wholesome food, and a variety of digestible dishes may be indulged in, always, of course, avoiding excess.

We shall now give directions for preparing a number of articles especially suited for the food of the sick; those, that is, who cannot properly take ordinary solid meals.* Different things are required for different cases. Of this the physician must judge, when one is in attendance. In his absence, those in charge must be guided by the symptoms and conditions present.

BEEF-TEA—Chop a pound of good lean round of beaf into very small pieces. Pour over it a pint, or *less* (never more) of cold water. Cover it, and let it stand for two hours near the fire, or on a part of the range or stove where it will not become very hot. Then put it right on the fire, and bring it to the boil. As soon as it is fairly boiling, remove it, and take off all the scum from the top. *Pour it off* from the pieces of meat at the bottom, but *do not filter or strain it*, unless through a coarse sieve. Straining robs it of much of its nourishment. The fat must be carefully removed, which can be done best with a clean piece of blotting-paper, or a small (salt) spoon. Salt may be added according to taste; when the stomach is weak, also black or red pepper. In the extreme weakness of *delirium tremens*, red pepper may be *freely* added; a little of it is suitable in nearly every case where beef-tea is needed. Beef-tea should be *stirred* just before using it, so as to get a rich brown color.

BEEF-TEA COLD-MADE.—Chop finely a pound of good beef. Add to it a pint of cold water, in which have been put fifteen drops of chlorohydric (muriatic) acid, and a pinch of salt. Let it stand an hour, and then drain off the liquid. Pour another half-pint of cold water over the beef that is left, and add it to the first quantity. All may be then strained through a coarse sieve, and used cold.

FROZEN BEEF-TEA.—Put a suitable portion of beef-tea, made as above first directed, in a convenient vessel, within an ice-cream freezer. Let it then be frozen as if it were cream. This is particularly suitable in the *summer complaint* (cholera infantum) of children; also in some other cases in hot weather.

BEEF ESSENCE.—Cut up a pound of good lean beaf into small pieces, and put it into a pint bottle (or other handy receptacle), without any water. Cork the bottle *loosely* and place it up to its neck in water in a stewpan. Then *boil* the water in the pan for three or four hours. This will bring out the juice (essence) of the meat, which should be *poured* off, not strained. The fat must be removed as with beef-tea. This is the most concentrated of all articles of food. It is often of the greatest value in conditions of prostration; as a little of it goes a great way, while requiring almost no effort of digestion. Red pepper may usually be added to it in moderation, and salt according to taste.

BROILED BEEF JUICE.—Broil a pound of lean beef. Cut it into strips, and press out the juice with a lemon-squeezer or meat-press. A pound of meat will give about three tablespoonfuls of "gravy" or juice. When salted according to taste, it may be taken either hot or cold, as preferred.

RAW-BEEF EXTRACT.—Cut up good lean beef *very fine*, and put a pound of it with half a pint of cold water in a bottle. Let it soak for about twelve hours, shaking it well half a dozen times or more during that time. Then pour it off through a coarse sieve, and salt according to taste.

RAW-BEEF SCRAPINGS.—Take a piece of good tender beef, and, with a rather dull knife, scrape off all of it that will come, leaving the tough, gristly portions behind. The pasty meat thus obtained may be salted

* To show that fluid food may suffice even for a length of time, I have just read an account of a man who died at the age of eighty-five years, who, when seven years old, swallowed by mistake some strong lye, the effect of which was to contract his œsophagus (lower gullet) so much, that he never afterwards could swallow solid food.

a little and used at once as it is, or it may be rubbed up with half its quantity of granulated white sugar. The latter plan will be likely to suit children best.

Good well-boiled *ham* (as well as *dried beef*) may be treated in the same manner. Infants recovering from summer complaint are sometimes very fond of such food.

CHICKEN BROTH—Clean half a chicken and remove the skin. Pour on it a quart of cold water, and salt to taste. Add a tablespoonful of Carolina rice, and boil slowly for two or three hours. Then skim it well to get off all the fat, and add a little parsley. This is one of the most agreeable of dishes for many sick people.

OATMEAL GRUEL.—Boil a pint of water, and while boiling, mix with it two tablespoonfuls of (Canada, Bethlehem, or Ohio) oatmeal, which has been first rubbed smooth in a little cold water; also, add half a pint of milk, and a little salt. Let all simmer together for half an hour, then strain it through a hair-sieve, sweeten, and add a little nutmeg. A few raisins may be added before the boiling.

INDIAN-MEAL GRUEL.—Stir a tablespoonful of Indian meal till it becomes smooth, in half a teacupful of cold water. Then mix it well with a teacupful of boiling water, and add half as much milk: then boil it until it is moderately thickened. Salt or sweeten according to taste. Raisins may be put in before boiling, if desired.

BARLEY WATER.—Wash well two ounces of pearl barley with cold water, throwing that water away. Put the barley into a pint and a half of fresh cold water, bring it to the boiling point, and boil for twenty minutes in a covered vessel. Strain, sweeten to taste, and flavor with lemon-juice and a little lemon-peel. In certain cases, as in using it to feed infants, the lemon had best be omitted.

RICE WATER.—Boil an ounce of Carolina rice in a quart of water for an hour and a half. Pour off or strain, and add either salt or sugar and nutmeg, according to taste. Salt will generally be best.

TOAST WATER.—Cut a slice of stale bread half an inch thick, and toast it brown all over, without scorching. Pour over it a pint of boiling water; cover closely, and let it cool; then pour or strain it off for use as a drink. Some patients like it better when a slice from an apple, and a very little lemon-peel, are laid on the toast before the water is added.

BREAD-AND-BUTTER SOUP.—Spread a slice of well-baked bread with good fresh butter, and sprinkle it moderately with salt and black pepper. Pour a pint of boiling water over it, and let it stand a few minutes before use. This will do for patients who are not very sick, as a soft article of low diet.

PANADA.—Cut two slices of stale bread, without crust. Toast them brown, cut them up into squares about two inches across, lay them in a bowl, and sprinkle with salt and a little nutmeg. Pour on a pint of boiling water, and let it stand to cool.

VEGETABLE SOUP.—This may be made, of course, in many different ways. The following is about the simplest; put two potatoes, a handful of peas, one ripe tomato, and a piece of bread, into a quart of water, and boil it down to a pint. Then throw in a little chopped celery or parsley, and salt. Cover, and remove from the fire. A delicate stomach may require it to be strained for use.

BOILED FLOUR.—Tie up a quart of wheat flour in a pudding-bag, tightly. Put it into a pot of boiling water, and keep this boiling for several hours (all day or all night will not be too long). Then take out the flour and dry it near the fire. Peel off and throw away the thin outer portion, and grate down the mass, with a nutmeg-grater, into a powder, for use as wanted. One or two teaspoonfuls of this may be rubbed into a paste with a little milk, and then stirred into a pint of milk, which is to be *scalded;* that is, just brought to the boiling-point, without being boiled. This is often beneficial in the *diarrhœas* of infants or older persons.

ARROW-ROOT.—Mix a tablespoonful or rather more with a little cold water, till it becomes smooth and pasty. Boil a pint of water, stir in the arrow-root, and boil it for a few minutes, until it thickens sufficiently. Sweeten to taste with white sugar, unless salt be preferred. A little lemon-peel or orange-peel added before boiling will improve the flavor.

TAPIOCA.—Cover two tablespoonfuls of tapioca with a full teacupful of cold water, and let it soak for several hours. Put it then into a pint of boiling water, and boil it until it is clear and as thick as is wanted. Sugar, nutmeg, lemon, etc., may be used to season it.

SAGO JELLY.—Mix well together four tablespoonfuls of sago, the juice and rind of one lemon, and a quart of water. Sweeten to taste, let it stand half an hour, and then boil it, stirring constantly until clear.

FARINA GRUEL.—Mix two tablespoonfuls of farina with a quart of water, and let it boil long enough to become thick. Add a pint of milk and a little salt, and then boil again for a quarter of an hour, Sweeten according to taste.

RICE MILK.—Boil a tablespoonful of rice for an hour and a half in a pint of fresh milk, then rub it through a fine sieve. Add a tablespoonful of fine (granulated) white sugar, and boil again for two or three minutes.

OATMEAL WITH BEEF-TEA.—Mix a tablespoonful of oatmeal quite smoothly with two tablespoonfuls of cold water. Add this to a pint of strong beef-tea, and heat to the boiling-point, stirring all the time. Boil for five minutes. Then remove from the fire, skim off all the fat, and serve for use.

Other occasional additions to beef-tea, which will agree with all except the most delicate stomachs, are (though not both at once) raw *egg* and *cream*.

GELATINE FOOD.—Soak for a short time in cold water a piece of prepared gelatine two inches square. Boil it, then, in half a pint of water until it dissolves, which will take ten or fifteen minutes. Rub a teaspoonful of arrow-root into a paste with a little cold water, and stir it into the gelatine water at the end of its boiling. Add also from six to twelve tablespoonfuls (according to the child's age) of milk, from one to four tablespoonfuls of cream, and a moderate amount of loaf-sugar.

IMITATION OF MOTHER'S MILK.—Obtain from a druggist packages of pure *milk-sugar* containing, each, seventeen and three-quarter drachms. Dissolve one package in a pint of hot water. Mix together two tablespoonfuls of cream, one of milk, two of lime-water, and three of the milk-sugar water. Warm this mixture, and add it to the pint of solution of milk-sugar in hot water. It is then ready for use.

The packages of milk-sugar, while dry, will keep for a long time. The solution of it should not, in hot weather, be kept on hand for more than a day or two, at most,

EGG BROTH.—Mix two ounces of pearl sago in half a pint of cold water, and let it stand half an hour. Then boil it until it becomes smooth and sufficiently thick. Beat the yolks of four fresh eggs with half a pint of cream; then mix with the sago, and stir the whole well with a quart of beef-tea, or chicken-broth, just made and at boiling heat.

EGG WITH WINE.—Beat up a raw fresh egg, and stir with it one or two tablespoonfuls of sherry wine. This, as well as the preparations that next follow, is only suitable where *stimulation* is required, under the advice of a physician.

CAUDLE.—Beat up a raw fresh egg with a wineglassful of sherry wine, and add it to a half pint of hot oatmeal, Indian meal, or farina gruel. Flavor with lemon-peel, nutmeg, and sugar.

WINE WHEY.—Boil half a pint of milk, and while boiling add half a glass or a glass of sherry or Madeira wine. Strain off the curd through muslin or a sieve. Sweeten the whey to taste, and grate upon it a little nutmeg.

MILK PUNCH.—Into a tumblerful of milk put one or two tablespoonfuls of whiskey, brandy, or rum. Sweeten, and grate nutmeg upon it. In some *very low* states of the system, punch may be directed by physicians made still stronger than this, even as much as a tablespoonful of whiskey to one of milk; but the use of such a powerful means of alcoholic stimulation needs great skill and judgment.

KOUMISS.—This mildly stimulant and somewhat nourishing Tartar and Russian drink is made by fermenting *mare's* milk. It may be quite well imitated, however, by adding to a quart of *cow's* milk a teaspoonful of granulated white sugar, and a teaspoonful of brewer's yeast, and leaving the mixture to ferment in a covered vessel or corked bottle. When this change has shown itself by the bubbles of effervescence,

PASTEUR IN HIS LABORATORY

The discovery of the mission of the exceedingly minute organisms known as bacteria in producing disease ranks among the greatest and most beneficent of our age. By it the art of the physician was first raised to the rank of a science. The honor of this discovery belongs to Louis Pasteur, the eminent French chemist and biologist.

it is ready for use. If kept for any time, it should be in strong bottles tightly corked (the corks tied down) and in a cool place.

ROAST OYSTERS. — Convalescents can sometimes relish and digest these sooner than any other solid food. Place a dozen fresh oysters in the shell upon a moderately strong fire, and allow them to remain there until their shells open a little. Then take them from the fire, open them at once, retaining the juice if possible, and serve them hot, with perhaps a little black pepper, and salt if needed. If the "hard part" is at all tough, it had better not be eaten.

TO KEEP ICE FOR THE SICK.—Cut a piece of clean flannel about eight inches square. Put this (after making a small hole in the centre) over the top of a glass tumbler, pressing the flannel down to half or more of the depth of the tumbler. Then bind the flannel fast to the tumbler with a tape or cord. When ice is put into this flannel cup, lay over it another piece of clean flannel, three or four inches square. So covered, it will keep for hours, even in warm weather.

FLOUR FOOD FOR INFANTS.—Let from five to ten pounds of selected wheat flour be packed in a bag so as to form a ball, tied with a strong cord, and boiled with the water constantly covering it from four to seven days. The starch appears to be so changed that it is more soluble and more quickly and easily digested. It is not necessary that the water be constantly boiled, provided that it remain hot or warm—the fire may go out at night. The same change may be effected by dry heat, the flour being placed in pans in the oven or on the stove, but it is very liable to be scorched by an excess of heat.

The flour removed from the bag and deprived of its external portion, which is wet, resembles a piece of chalk, but it has a yellowish tinge. The flour should be grated from it as it is required for use, and sifted to separate the small lumps which are likely to be broken off by the sieve. The infant will be better nourished if instead of diluting the milk with which it is fed with plain water, a thin gruel prepared by boiling a few minutes this flour in water, be employed. Two heaped teaspoonfuls of the flour to a pint of water suffice for infants under the age of three months, three teaspoonfuls for infants between the ages of three and six months, and four teaspoonfuls to the pint of water after the age of six months. The proportion of the gruel to the milk should be the same as stated above when pure water is employed.

Giving Medicines.

No one who cannot read should pour out a dose of medicine. Bottles containing poisonous drugs should be labeled poison, and such should, when practicable, be kept apart by themselves; and should, especially, never be left within the reach of children. Before pouring out or otherwise preparing a dose of medicine, look carefully at the label. No medicine should ever be kept in a bottle or other receptacle *without* a label. If a bottle which has contained one medicine is wanted for another, let it be *thoroughly* washed with hot water; and, on putting something new into it, change the label at once. If there is any doubt about the medicine in a bottle, *throw it away*, do not venture to use it without being sure of its nature.

After looking well at the label, before beginning to pour from the bottle, turn the labeled side away, so as not to pour over it; as some drops are apt to run down on the bottle, and might thus stain and obscure the label so that it could not be read.

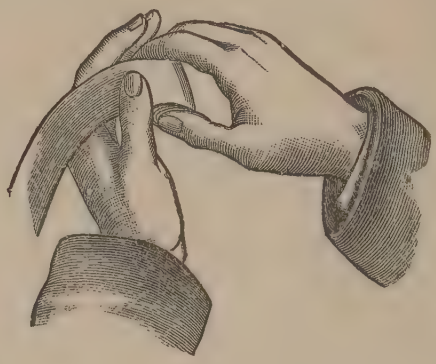
Dropping medicine requires care and skill. To do it, moisten one edge of the top of the bottle with the contents of the bottle, and then, holding and tilting the latter in the right hand, with the left very slowly and cautiously withdraw the cork or stopper, until a drop rolls out. As this comes out, at once push the cork in, and then repeat the same process again and again, until the right number of drops has been obtained.

To give medicine (or liquid food) to a patient too ill to be lifted up in the bed, a *bent glass tube* is very convenient; and so are the half-covered spoons and cups sold by apothecaries. Glass vessels with the quantities marked on them are convenient.

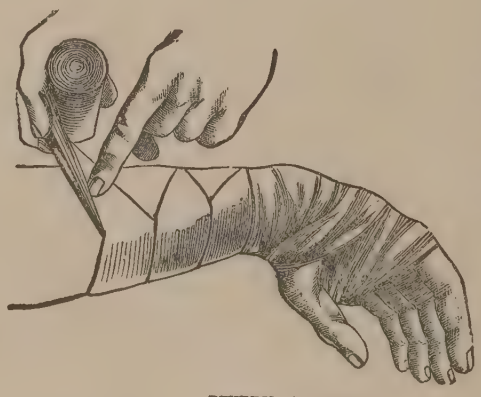
ACCIDENTS AND INJURIES

In all cases of accidents *coolness* and *presence of mind* are of the utmost consequence. Danger is increased by alarm and confusion. One who has his senses about him may, by simple and prompt action, in some instances, avert serious harm.

BANDAGED LIMB.



ROLLING A BANDAGE.



REVERSING BANDAGE.

Bandaging. The purpose of bandaging is to retain certain parts of the body, or "dressings" upon it, in position, without too much pressure; or, sometimes, to make pressure for a time or even continuously.

Material for bandages may be unbleached muslin, about as thick as that which is used for sheets; or soft unglazed linen. It must vary in width and length according especially to the part upon which it is to be applied. For the chest, as for a fractured rib it should be about four inches wide; for the thigh or leg of a man, two and a half to three inches; for the arm, two to two and a half inches; if used for a finger, an inch in width will answer. The *length* may vary from a yard or two to five or six yards in a roll.

How to *roll up* a bandage is a matter of simple management. After doubling an end for a beginning, take it in one hand, between the ends of the thumb and fingers, with the rolled part downwards; holding the bandage then between the side of the forefinger and the thumb of the other hand, so that it may slide between the finger and the thumb of that hand, as it is drawn and rolled up by the fingers of the other. In hospitals they sometimes have a small instrument with which to roll bandages rapidly.

Two rules are very important in bandaging. First, never make any bandage so tight as entirely to check the movement of

blood, unless for a short time (as with Esmarch's rubber-tube compression to prevent hemorrhage in operations) to arrest bleeding; and second, never so apply a bandage as to compress veins in a way to cause swelling *below it*. To fulfil the first of these rules, the feeling of the patient, and one's own common sense, will generally suffice. In regard to the second, the *neck*, of course, must not be so bound as to interfere with the return of blood from the head through the jugular veins; and, when an arm, or any part of it, is bandaged, the *hand also* must be covered; if it be the thigh, or leg, all below it, including the foot, must be equally compressed. Otherwise, the parts below the bandage would swell up, and might, if so kept long, even mortify.

When bandaging the forearm and arm, it is best to begin by passing the bandage around the wrist; then turn it down over the hand and cover it; afterwards go, with *reverses*, up the forearm, and, if necessary, the arm. In covering the lower extremity with a bandage, begin in like manner around the ankle; next go around the foot; and then, with *reverses*, up the leg.

To apply a bandage to any part, take the bandage in the right hand, with the *outside* of the roll held in the palm, and the thumb touching the part which is being unrolled, along the edge of the roll, inside. The left hand is then to fix the end, and succeeding parts, of the bandage in place where it is applied. *Reversing* is done to make the bandage lie smoothly on an uneven surface; as the hand, foot, forearm, leg, etc. It is effected by turning the right hand which holds the roll, so as to obliquely double the bandage, for one or more turns, as required. A little practice will make this easy enough.

Burns and Scalds.—*Burns* are caused by dry heat, or by something else than water; *scalds* by boiling water, steam, or other hot fluids. The danger to life of either is in proportion to their extent of surface, and their depth. Even a superficial burn or scald will kill, if it involve so much as half, some authorities say two-fifths of the body. Death is then produced in two ways; by the *shock*, and by the *arrest* of the necessary functional action of the skin. The *treatment* of burns and scalds is essentially the same for both.

What to do when one's clothes have caught fire, is important. Seize a shawl, rug, mat, coat, or overcoat, if any be within reach, and wrap it closely around the burning part. Or, if not, lie down and roll on the carpet; at the same time crushing the burning garment with the hands. If one sees another person on fire, the same thing out to be done. A man's overcoat, or a rug, etc., may be thrown closely about the victim of the flames, who should be quickly laid down on the floor, so as to be covered more readily and entirely. The reason for this is, that the way to extinguish any fire, large or small, is, to *shut out the air from it*.

When a person is badly burned, the shock to the nervous system is followed by *prostration* or *collapse*. There is great weakness, pallor of face, flickering pulse, short breathing, and coldness of the body. For this condition, *opium*, in the form of *laudanum* (fifteen drops at once, repeated if necessary in an hour, until three or four doses have been taken) is a good stimulus. Small quantities of *whiskey* or *brandy* also, one or two teaspoonfuls at a time, may be given, at half-hour intervals, for a while; to be withheld at once when signs of reaction come. Such signs are, strengthening of the pulse, warming of the skin, and return of color to the face.

Applications for Burns.—For the burn or scald itself, there is no better application than *lime water* and *oil* (flaxseed, olive, or lard oil) mixed together in equal parts. Lint, if it can be had, if not, muslin or linen rags, should be well wet with this, and laid all over the burn. If the burnt surface be extensive, over the lime-water and oil dressing put a layer of *cotton wadding*, for warmth. Should it be a small burn, put instead of this a piece of oiled silk, oiled paper, or rubber cloth.

A burned hand or foot will obtain the best relief by being held in *cold water* for some time. A remedy for limited burns which has lately become popular is, a *saturated solution of soda* (sodium-bicarbonate). Other applications sometimes used are, simple oil (lamp-oil, castor-oil, etc,), and

powdered starch. But nothing is equal in effect to the "carron oil," as the mixture of lime-water and oil has long been called.

When the sufferer's clothing covers the burn, it should be carefully removed by untying, unbuttoning, and cutting everything needful, so as to get all off *without pulling* or much moving the injured body. Raised water-blisters should be merely *pricked* to let out the water; leaving the cuticle to protect the true skin underneath. Then apply the dressing above spoken of. If the patient reacts and does well, the lime-water and oil rags must be renewed when they begin to get dry; taking them off with extreme gentleness, so as to disturb the parts as little as possible. After two or three days, a dressing of *simple cerate*, thickly spread on lint or soft rags, may be substituted for the oily dressing. Deep and extensive burns are sometimes very slow to heal, and leave ugly contracting scars which may require special surgical attention.

Choking; Strangling.—These are not the same in *causation;* but the danger is in both the same—stoppage of breathing by an obstruction in the windpipe. In choking, properly so called, the obstacle is within the throat; in strangling, it is from a cord, etc., outside of and around it; as in *hanging*.

Choking is most frequently caused by getting something "the wrong way" in swallowing. That is, what should go down into the gullet or swallowing throat (*pharynx* and *œsophagus*) gets into the windpipe (*larynx* and *trachea*). The windpipe is just in front of the swallowing gullet; the latter is next to the spine. When one laughs, or in any way breathes, while swallowing, this accident may happen. Even a drop of water going the wrong way, will cause a distressing spasm of the windpipe; but this is over in a few moments. Danger follows when a *solid* mass—as a mouthful of meat,—slips into the larynx; or when a large piece of meat gets stuck fast in the *pharynx* (gullet) so as to press on the *trachea* (windpipe) forcibly enough to keep air from being breatned through it into the lungs. Commonest of all, perhaps, is a fish-bone, or a chicken-bone, getting crosswise, so that it neither goes up nor down. Other things may slip into the windpipe.

No time is to be lost, when any one is choking. A long-fingered person should try to dip a forefinger at once into the throat as far as it will reach, to draw up and out the offending bone, or whatever it is. If it is a child, lift him up by the heels and slap him smartly, while in that position, between the shoulders. Children sometimes swallow pins; they stick, as bones are apt to do, across the entrance to the throat, pretty far up. Surgeons have long slender forceps and other instruments with which to seize such articles and withdraw them. All such things, everything except a piece of solid food in the swallowing throat, should be taken *out*, not pushed *down*. If time allows, a piece of wire may have a loop made in its end, and then be curved near that end, so as to be passed down, behind or below the obstacle, to draw it out. A proof that the thing is in the windpipe is obtained if the person can swallow a drink of water, yet has great distress and difficulty in breathing. This difficulty is great in expiration (out-breathing) as well as in inspiration. A physician being sent for immediately, in an urgent case, fatal suffocation being threatened, may find it necessary to *open* the larynx or trachea, by an incision, in order to save life. If the immediate danger be passed, the question of such an operation may still have to be considered, when a foreign body remains in any part of the air-passages.

Strangling is best known in the form of hanging, which is a frequent mode of suicide. If any one is found hanging by the neck, hold up the weight of the body, and at once loosen the cord at the neck; cutting it will generally be the speediest way, if a knife is at hand. Then lay the person down, and, with as much fresh air around as possible, dash cold water lightly on the face (if it be in a warm place, on the bare *chest* also). Rub the arms and legs briskly, especially *upwards*, to favor the movement of blood in the veins, which is towards the heart. Heat a poker or flat-iron, not quite to a burning heat, but so that a hand cannot rest on it long with comfort; and touch that gently upon the pit of the stomach, and

then draw it along down each side of the back. Apply mustard-plasters to the legs.

But all these things should be got ready and done by the *secondary* assistant or assistants. If a person cut down from hanging does not breathe, he should be laid on his back on the floor or ground, wherever he is, without loss of time. A roll of clothing, like a round knapsack, should be placed under his shoulders; and then *artificial respiration* should be attempted, by Silvester's method. See Drowning.

ARTIFICIAL RESPIRATION.

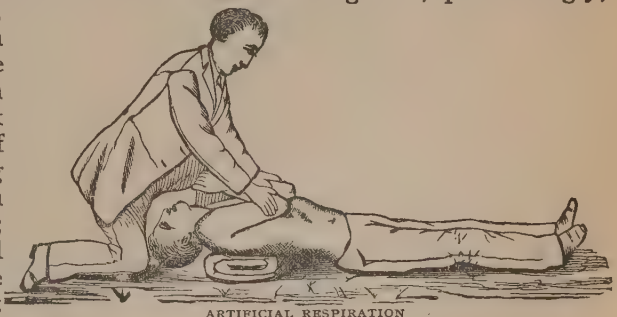
Drowning.—One whole minute under water will, except with a few practised divers, end life in a human being. Still, by active means, those longer immersed, as much as five minutes, have been restored. It is always worth while and right to give every drowned person the benefit of the doubt, and to work over him for at least an hour, even if no signs of life appear, before giving him up. Drowning kills by exclusion of air from the blood in the lungs; water taking its place. This is said to be an easy mode of death. Those recovered from it describe it as a sort of dreamy sleep, followed by entire unconsciousness.

A person has been, we will suppose, a few minutes under water, and is dragged out. At once, on the spot, lay him first on his stomach, and raise his feet a little higher than his head, for a few moments; some one at the same time pressing with moderate force on the sides of the chest. The object of this is to let water *flow out*, if it will, from the lungs.

Next, lay the patient on his back, and put under his shoulders a roll of clothing, such as a rolled-up overcoat, a hard pillow, etc. Draw out his tongue, with a thumb and finger, and get some one to hold it until it can be fixed forward, to prevent it from falling back and closing the entrance to the windpipe. For this fixation a small india-rubber band will be best. If none such is on hand, a paper-cutter, or a small stick, may be held upon the drawn-out tongue, pressing it upon the lower teeth.

Now comes the effort to produce *artificial respiration*. Silvester's method is the best.

Stand or kneel behind his head, and take hold of his arms just above the elbows. Draw them both gently and steadily upwards, over and back of the head, at their full length; and keep them there for a second or so. Then carry them back again to the patient's sides, and press the elbows firmly against his sides, for another second or so. Go on doing this, perseveringly,



ARTIFICIAL RESPIRATION

if necessary, for an hour or more. The object of it is, to promote expansion of the lungs to admit air, by the first movement; and its expansion, again by the second movement.

Meanwhile, another assistant should cut the clothing so as to remove it, rub the skin dry, and cover the body with warm flannel.

The legs may be rubbed briskly, *upward*, so as to favor the return of blood in the veins to the heart. Smelling-salts may be now and then held for a few moments under the nostrils. If a fire be near, heat a small flat-iron, or a poker, or shovel, not quite to the burning point, but pretty hot, and touch it gently, again and again, to the skin over the pit of the stomach. This is a powerful mode of stimulation.

When natural breathing begins, stop the arm movements. Continue the rubbing, but also have hot bricks, flat-irons, or bags of sand or salt, bottles of hot water, or anything else warm, laid alongside of the patient's body, and put to his feet. Get him now upon a bed. Shortly, he will recover so as to swallow; and *hot milk* or *hot coffee or tea* will be better for him than anything else.

Ear, Foreign Bodies in.—So disagreeable is the odor of the natural ear-wax, and so sticky is it to insect's feet and the bodies of grubs or worms, that they very seldom find their way into any one's ear; even when sleeping on open ground or in the woods. Once in a great while such a thing may happen. To get an insect out, let the person lie on the other side, and let some one pour in, slowly, cold water. Alarm may then cause it to back out; if not before long the water will drown it. Then the larger part, or the whole (if it be not too soft) may be got out with a pair of ear-picks, or with a hair-pin bent into a scoop at its round end, or a piece of wire bent at one end into a small loop or ring. Particles still left can be washed out with warm water injected from a small syringe.

Children sometimes put peas into their own or one another's ears. Then, water should not be poured in; it would make the pea swell up and give more trouble. Careful use of an ear-pick or bent wire (as above), with a strong light thrown upon the ear-passage, will generally succeed in getting the pea out. A large hand-magnifier, such as is often used to look at engravings, etc., will help in this effort. If a shot has been put into the ear, pour in a teaspoonful of olive or almond oil, and then let the child be turned rather suddenly over, so as to cause the shot to roll or slide out.

Eye, Foreign Bodies in.—Small particles, of sand, dust, cinders, from a locomotive, etc., often get under the upper or lower eyelid; most frequently the latter. If the particle be very small, closing the eyes and blowing the nose hard several times, rolling the eyeballs at the same time, will be apt to work it, by aid of the flow of tears, to the inner corner of the eye; where it can be easily removed. To relieve another person of such an annoyance, first make sure where it is. Open the eye in a strong light, and draw down the lower lid. Use a magnifying glass, if one can be got (a good thing always to have in a house). If you see the speck, a camel's-hair pencil (small paint-brush) will be the best thing to get it out with. Draw the brush *backwards* against it; don't push at it with the point of the brush. If there is no such brush at hand, the corner of a soft handkerchief may be used instead.

Should nothing be found under the lower lid, you must look under the upper one. Seat the person on a chair, and stand behind him; then, with his head leaning back, hold a lead-pencil or pen-holder in the right hand, and, drawing out the upper lid by its lashes, the patient looking downward, you lay the pencil along the lid and turn the latter up over the pencil. It is not difficult, with a little confidence, to do this with a finger instead of a pencil, and standing in front of the patient. While the lid is turned up, look closely to find the intruding particle, and remove it with a brush or a handkerchief, as above described. The eyes must then be kept at rest, closed for a while, to get over the disturbance; otherwise a troublesome inflammation may result. Quite often, when there has been a particle in the eye, but it has been rubbed out, there will still be left a *feeling*, exactly as if it was still there. When this is the case, a careful examination showing it to be so, the irritation will gradually disappear, if the eyes are kept quiet.

Pieces of stone or iron sometimes fly into the eyes and lodge in the front of the ball. Their removal will require surgical skill. A powerful magnet may assist in getting out a fragment of steel or iron from the eye.

After all, to get a *movable* particle out of

one's eye, the best way in most cases will be for the person to open both eyes in a basin of clean cold water; moving the head once or twice from side to side while they are open, so as to wash the particle out of the eye.

Fainting.—One who faints, falls, unless held up, as when standing or sitting up in a crowded place. But not every fall is fainting. It may be an epileptic fit; but then the patient is *convulsed;* that is, his limbs, and perhaps the muscles of his face, *jerk.* There is a modified form of epileptic attack, not common, in which the sufferer lies still; in that, however, the pulse is not so weak as in *syncope* or fainting.

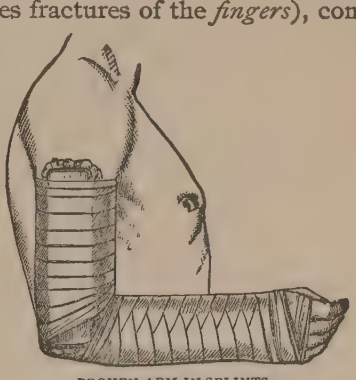
One attacked with apoplexy falls; but his flushed (or at least not pale) face, warm or hot head, slow and full pulse, and slow, snoring breathing, make the case clear. An intoxicated person, or one stupefied with opium, may be found lying unconscious. The odor of liquor in the former, and the contracted pupils of the eyes of the latter, usually serve for distinctions. (Odor of liquor on the breath, however, does not prove that the person may not have apoplexy as well as intoxication.)

In a faint, the face is pale, the forehead cool or cold, the pulse absent or extremely weak, the breathing noiseless and feeble. Once in a while we meet with mixed attacks; almost always in those whose hearts have undergone some degenerative change; in which there is a partial stupor, perhaps with snoring breathing, along with the other signs of fainting. Such an attack differs from apoplexy in that it soon passes off, and leaves no palsy after it. But such spells are comparatively rare.

Fainting is most common in young women; next so, in weakly old people of either sex. In these last it is most dangerous, and may in them easily end in death. What happens in a faint is this; the heart gives out, and sends no fresh blood to the brain; the brain fails, therefore, to maintain consciousness, and the person falls. This fall is advantageous, because it causes more blood to flow to the brain, and, consciousness being renewed, the heart also having less laborious work when the body is level, all starts again. A crowded and close room is a frequent place for fainting. Fright, the sight of blood, and other mental causes, as well as fatigue, may produce it, in those liable to it. Some persons never faint, through a long lifetime; others do so often, even on very small occasions.

What to do for fainting? Lay the person down at once. Get the crowd, if there be one, to move away. Open the windows, or carry the unconscious patient (horizontally) out into the fresh air. Sprinkle cold water on the face; loosen everything about the neck and chest; hold smelling-salts, for a moment at a time, under the nostrils. An ordinary syncopal attack will thus soon pass away.

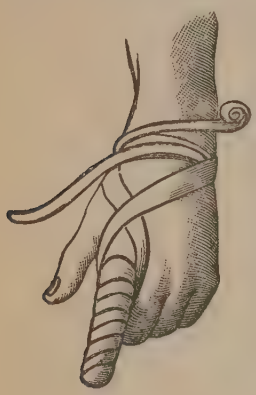
Fractures.—*Broken Bones.*—Most frequently broken is the *radius;* the thumb-side bone of the forearm, which is most closely connected with the hand. We may break it by falling on the hand with force. In the same way also the *ulna* may be fractured; the other bone of the forearm. Next often broken is the bone of the *arm* (humerus) above the elbow; and frequently also the *clavicle*, or collar-bone. After these (besides fractures of the *fingers*), come fractures of the larger bone of the leg (*tibia*, shin-bone) below the knee; the thigh-bone (*femur*); of the ribs; of the knee-pan; and of the nose, lower jaw, and skull.



BROKEN ARM IN SPLINTS

We know a bone to be broken by the change in its shape; the pain caused by every movement; and the crackling noise (not loud), and crackling feeling to the touch, produced when the parts are moved. A broken limb is generally shortened; the muscles above and below the place of fracture drawing the two pieces so as to overlap

each other. When the break is near a joint, it is sometimes difficult to be sure whether there is a fracture or a dislocation. This difficulty is much increased when swelling and inflammation follow, some hours after an injury. In examining to determine a change of shape in a limb, always compare it with its own fellow, on the opposite side of the body. The two are almost sure, when sound, to be alike; and if not so after one is hurt, this will help us to an understanding of the case. There is a change of shape also in *dislocations;* but in them the bones cannot be moved without great resistance; there is no crackling (crepitation) heard or felt; and when the bone is put back in its right place, it will stay there.



FINGER BANDAGE, AND FIGURE OF 8.

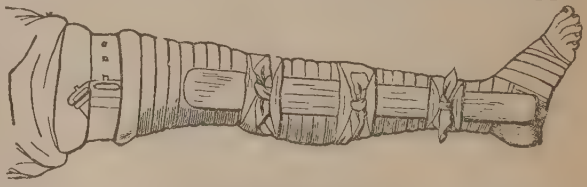
The most serious fractures are those called *compound* fractures; in which there is a wound of the flesh, communicating with the broken ends of the bone. Sometimes one end of a fragment is forced quite out through the skin.

In the *treatment* of fractured bones, the two aims are, to get the broken parts into their right places again, and to keep them there until they "knit together." This takes place by a natural process of growth, exactly like that by which a wound is healed on the surface of the body. A thick colorless fluid, *plastic lymph*, is poured out around and between the ends of the fragments of the broken bone. Gradually this fluid is, between those fragment-ends, changed to gristle (cartilage); and, in time, that gristle becomes solid bone. In one bone, when broken, the *knee-pan* (*patella*), it seldom gets beyond the stage of gristle or cartilage; because that bone, from its situation, receives too little blood to enable it to grow or repair so well as other parts.

Putting a broken bone back to its right shape is called "setting" the bone. This is done, in most instances, by *stretching* the limb, so as to overcome the shortening action of the muscles; and at the same time adjusting the fragments by proper pressure near the place of fracture. After this has been effected, as nearly as possible, some means are needed to hold the parts in the same position. For this, *splints*, *bandages*, *adhesive plasters*, etc., are used. No unprofessional person should venture, if avoidable, to carry out the treatment of a broken bone without the aid and direction of a surgeon.

Joints, Sprained.—Any of the joints may be wrenched or sprained, without actual displacement. This happens often with the ankle, knee, wrist, elbow, fingers, etc. The ligaments are then stretched, and some of their fibres may be torn or broken. Hence follows more or less inflammation, and lameness until the ruptured ligaments have time to heal again. Since the "fibrous tissue" of which they consist has only a low grade of vitality, and not much blood is given for nourishment of the joints, this process of repair in them is slow. A sprained ankle or knee may be longer in getting well than a broken leg would be. At least this is apt to be the case unless the sprained joint has given to it the best chance possible from the first. This is to be had by the patient giving up to rest it completely as soon as it is hurt. This inflammation may be averted or kept low, and a moderate sprain may get well in a few days.

Nail, Splinter under.—To get out a splinter which is beneath the nail, *pare* the nail carefully, over the splinter, making a narrow groove, until its upper end is exposed. Then, with a pair of small nippers or tweezers, or less easily with a thumb and finger, one may seize and draw it out. When a nail is injured or destroyed, it grows from above, that is in the direction of the length of the finger or toe, downwards



BANDAGE AND SPLINT ON LEG

or forwards. This can easily be observed on watching the change of position of marks made and left by the injury, as the nail is gradually restored.

Needle penetration.—A needle gives almost no pain in entering the flesh anywhere; and it may slip about and be pushed by the muscles in various directions, so as to come near or through the surface far from where it entered. If a needle should happen, in such wanderings, to reach the heart, it would no doubt so affect its movements as to cause death; but that is extremely unlikely to happen. Still, nobody wishes to have even so small and smooth a thing slipping about in his body. If a needle, or part of a broken one, is known to enter the skin, a doctor had better be asked to try to get at it, if it has not already passed beyond being reached by a small incision. The same may be said of bits of broken glass. If not seen and removed when first getting in, they may remain a long time without much irritation or disturbance.

Nose, Foreign Bodies in.—Children now and then push peas, small marbles, etc., into their own or one another's noses. If the intruding thing be not very large, blowing the nose very hard, while the other nostril is closed by pressure, may force it out. If not, a piece of wire (a hairpin will do) may be bent so as to form a small round loop at its end, and this (first being oiled) may be gently pushed up around and behind the offending object, to draw it down. Should this not succeed, the aid of a surgeon must be obtained, who will use slender-bladed but strong forceps, made for such emergencies.

Swallowing *indigestible things* gives alarm in many cases where there is little danger of real injury. *Pins* are apt to be swallowed when held in the mouth, which is a very imprudent thing to do; but they will more often stick across the upper part of the throat than go down. (See Choking.) When a pin is actually swallowed, there is reason to believe that it is almost sure to find its way at last through the bowels and out with the discharges. If a *horn* button, or a piece of india-rubber, or marble, is swallowed, it will be pretty sure to take the same course in time. None of those things are poisonous. A metal button, however, as one of brass, or a copper coin, as a penny, is much worse. Such a thing may pass safely through; but if it stays in the stomach or bowels, gradually corroding, it will poison the system, perhaps, fatally. From such a result, no medical skill can provide escape; unless, when such a thing is known at the time to have been swallowed, prompt dosing with an *emetic* will bring it up with vomiting. A teaspoonful of powder of ipecacuanha, or a teaspoonful of syrup of ipecac., repeated in ten minutes if necessary, and followed by a large drink of warm (not hot) water, will answer for this purpose. If no ipecac. is at hand, a tablespoonful of salt, or a teaspoonful of mustard, in a teacupful of warm water, will do.

It is not worth while to give an emetic on account of the swallowing of *non-poisonous* indigestible solids. Nor is it best to give, on their account, an immediate dose of purgative medicine. Let the person eat rather heartily of *soft food*, as mush, pudding, tapioca, etc.; and the next day, if the bowels are not free, he may take a moderate dose of castor-oil. While, however, such things, in a majority of cases, do no considerable harm, exceptions to this do occur On the whole, it is well to use our senses of touch, taste, and sight carefully, knowing what is in the mouth always before we swallow it. Among other things, when eating canned vegetables, fruit, etc., take care not to swallow bits of soldering metal, such as now and then become loosened in the can. As these contain lead, they may produce lead poisoning. This has been known to happen.

Wounds.—These may be either *Bruised*, *Crushed*, *Cut*, *Lacerated* (torn), *Penetrating*, or *Poisoned* wounds.

Bruises are familiar to everybody. If the blow or fall has been of such moderate violence as to injure only the surface of the head, body, or limbs, it is not a serious matter. Some blood will be forced out of the small vessels; swelling and discoloration will follow. It will be first red, then almost black and blue, and at last dull yellow or yellowish-brown This is the history

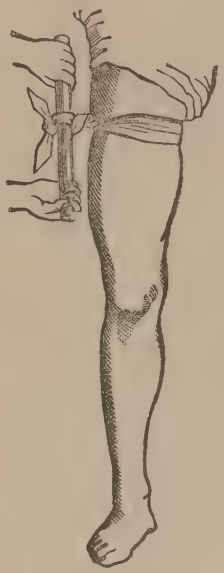
of a "black eye," or of a bruise of any other part. Early use of a soothing application will do the most good. There is nothing better for this than cocoa butter, or "camphor ice." Arnica has a reputation for bruises far beyond its desert. When a bruised part becomes painful, a cloth wet with lead-water and laudanum will be suitable. Later, bathing with soap-liniment will hasten the absorption and disappearance of the blood-deposit which causes the discoloration.

Crushed wounds are much more serious, often endangering life. Such, affecting the head, will cause fracture of the skull. Falling on the chest, ribs may be broken; or, worse, the heart or lungs may be so pressed as to kill at once or shortly. When a limb is crushed in a railroad accident, it may be wholly or partly severed from the body. We might expect great bleeding in such cases; but it does not occur; the arteries are paralyzed, and bleed little or none, even when torn across. The immediate danger then is from *shock*, going down into fatal *collapse*. When this is recovered from, the injured limb must be dealt with according to the methods of surgery. Amputation is often called for; the damage being too great for the limb to be possibly saved.

Shock constitutes the greatest immediate danger in all crushing injuries. Afterwards, there may be inflammation (or perhaps mortification) of internal organs involved; lungs, liver, stomach, kidneys, peritoneum, etc. Such cases will require perfect rest in bed, with treatment which can only be judged of by an experienced practitioner of medicine or surgery. *Tetanus* (lockjaw) occasionally follows a crushing injury.

Cut wounds are dangerous at first through *bleeding*. Bruised, crushed, and torn wounds bleed, as a rule, very little. Much difference exists as to *what* is cut in an incised wound. If only small vessels, the capillaries, are divided, the blood flows steadily, of a moderately red color, being a mixture of arterial and venous blood. If a *vein* is cut, the flow is steady, and the color of the blood is *dark*-red, almost blue-black or dark-purple. When an *artery* has been cut, *bright* red blood comes out in *jets*, timing with the pulsation of the heart in pumping blood through the arteries.

PRESSURE ON ARTERY OF ARM.



SPANISH WINDLASS.

PRESSURE ON ARTERY OF THIGH.

Whatever the source of a flow of blood from a cut wound, we should endeavor (after cleaning out, best with a stream of cold water, any *foreign bodies* in it) to stop the hemorrhage by putting and holding the edges of the wound together. *Pressure* may then be added, so far as needful and available. Over a solid bone, as the skull, this will always be practicable. Bleeding even from a divided artery of the scalp can always be checked, by firm pressure on the vessel against the bone. A *compress* may be made by folding up a fragment of

handkerchief, or rag of muslin or linen, into a thick piece an inch square. Laying this right over the source of the bleeding, it may be kept in place by the firm application of a bandage around the head.

To stop bleeding from a vein, large enough to be seen, when pressure at the wound will not do it, the rule is to press just *below* the wound; that is, on the side *farthest from the heart;* as the blood flows in the veins *from* the extremeties *towards* the heart.

When an *artery* bleeds, and pressure *at* the wound fails or cannot be applied, pressure must be applied *above* the wound; that is, on the side *nearer* to the heart; the course of the blood in the arteries being *from* the heart.

Lacerated wounds are those which are *torn;* as by machinery, or bites of dogs, horses, or other beasts, etc. They are irregular in shape, seldom bleed much, but often inflame, sometimes mortify, and hardly ever heal "by the first intention." *Machinery* injuries may be dreadful in character; a whole limb being torn off at once; or a hand or a foot torn to pieces. Such may be speedily fatal by shock; or their results may entail a tedious and uncertain struggle for life; at least when an arm or a leg is badly lacerated. *Erysipelas* is one of the dangers attending such injuries; *tetanus* (lockjaw), another; *septicæmia* (or *pyœmia*), another.

Besides what may be needful on account of the general shock to the system, lacerated wounds require to be carefully cleared of all fragments of foreign bodies, dirt, etc., and then protected from the air by a proper dressing. To *cleanse* such a wound, a stream of water should be allowed to flow over it from a clean sponge, dipped in warm water and squeezed above the wound. *Water-dressing* agrees well with such injuries. Double a piece of lint or soft linen, and squeeze it out of clean tepid water or clear lime-water. Lay this upon the wound, and cover it with a piece of oiled silk, oiled paper, or thin rubber-cloth. Bandage it on the part with just enough firmness to prevent its being displaced. Such a dressing will have to be moistened at least twice a day, and had better be changed once in twenty-four hours; disturbing the wounded surface each time as little as possible. Before the dressing is reapplied, sprinkle iodoform powder lightly over it. This is antiseptic and promotes healing.

Penetrating wounds may vary much; from piercing with a pin to a bayonet, sword, or bullet wound. Even a needle or large pin may be forced into the heart, so as to cause death. Every one receiving a severe penetrating wound, of any part of the body, must be kept in a condition of complete rest, awaiting results which need to receive the best professional attention, to meet the dangers, seen and unseen, belonging inevitably to such injuries.

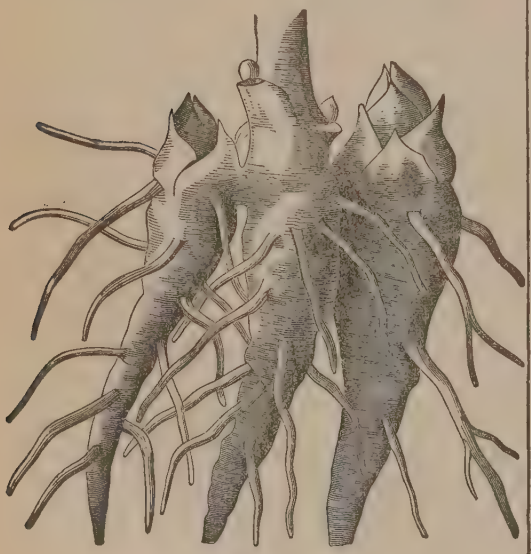
Poisoned wounds. These are seldom met with, even in war, amongst civilized nations, except by unintended causation. This may happen especially to physicians and surgeons, in their operations, and to medical students in the dissecting-room. Matter from dead bodies, or from diseased living ones, introduced even into the slightest scratch with a knife, needle, or pin, may so taint the blood as to produce a dangerous illness. Not a few physicians have suffered a fatal result from pricking a finger in a post-mortem examination. To *prevent* such results (besides care to avoid letting an abraded or punctured part come in contact with morbid matters), as soon as such a thing has happened, the part should be immediately *washed* and *sucked*, and then kept out of the way of further danger.

In the *treatment* of poisoned wounds, there is nothing different from that of those which are *penetrating* or *lacerated*, unless the wound is made by *rabid animals* or by *venomous serpents*. For either of these last, *immediate suction* is a right precaution; and at the same time a tight cord around the arm or leg, if either extremity has been bitten; then the end of an iron wire or rod, *heated red hot*, or a piece of *caustic potassa*, should be made to burn out the part; or a pinch of gunpowder may be exploded upon it. All these severe measures are designed to prevent the poison from getting, through the blood-vessels, into the system. Although not more, probably, than one in ten of those bitten by mad dogs have hydrophobia, that one will incurably suffer a dreadful death.

Poisons are of several kinds: Animal, as snake-venoms and cantharides; Vegetable, as opium, strychnia, tobacco; Mineral, as arsenic and corrosive sublimate. But a more useful classification of them is according to their effects: as Depressants, Irritants, Neurotics, and Complex poisons.

Depressants are prussic (hydrocyanic) acid, tobacco, lobelia, hemlock, and aconite. It is true, the effects of these, and indeed of almost all poisons, have some complexity; but their *chief* effect is depression, sinking, prostration; which, from a certain dose, is fatal.

Irritants are strong acids, as sulphuric, nitric, hydrochloric, oxalic, citric, and tartaric acids; strong alkalies, as potassa, soda, and ammonia; phosphorus; corrosive sublimate; tartar emetic; salts of copper



ACONITE ROOT.

and of zinc; castor-oil seeds; colchicum; croton-oil; cantharides; and certain fishes and molluscs (some mussels, etc.).

Neurotic poisons either produce *stupor*, as do opium, chloroform, ether, chloral, hyoscyamus, and camphor (in excessive doses); or *otherwise* damage the nervous system, with either *delirium*, *convulsions*, *tremor*, or *paralysis*, as strychnia (or nux-vomica), belladonna, stramonium, calabar bean, cocculus Indicus.

Complex (Irritant-Neurotic) poisons are such as arsenic, carbolic acid, creosote, digitalis, ergot, fungi (toadstools, etc.), hellebore, iodine, bromine, lead, etc.

Depressant poisons cause prostration, sinking: with paleness, coldness, feeble pulse, gasping breath, with or without nausea and vomiting; all the symptoms of *collapse*.

Irritant poisons produce burning and pain in the mouth, throat, stomach, and bowels; with nausea, vomiting, and purging; an *artificial cholera-morbus*.

Neurotic poisons have just been described as causing either stupor, delirium, convulsions, tremor, or paralysis. *Complex* poisons may combine several of either of these kinds of effects.

So far, we have been considering poisons as taken into the *stomach* by the mouth. It must be remembered, however, that they may also enter the system by being *breathed* into the lungs; *injected* under the skin; or even *absorbed* from the surface of the skin (especially with children; a tobacco leaf has been so fatally used); or *inserted* into the bowels, etc.

With these general remarks, we may now take up those poisons most likely to be met with, or heard or read about, *alphabetically*, for ease of reference by the reader.

Acids. As already said, strong acids are generally *irritant* poisons. Hydrocyanic or prussic acid is a powerful *depressant*. The *antidotes* for acids are alkalies and alkaline earths; as soda, limewater, chalk, magnesia, and soap, etc. In like manner, acids of the milder sort, as vinegar, lemon-juice, etc., are *antidotes* for poisonous doses of strong alkalies or alkaline earths, as caustic potassa, soda, ammonia, or lime.

Aconite. All parts of this plant (Monkshood, *Aconitum napellus*) are poisonous. The only form in which any one is likely to take it injuriously is that of the *Tincture*

of aconite root, in overdose (the proper dose is one, two, or three drops), or by mistake for something else. Death has been caused in this way: two bottles are standing by a patient's bedside, one containing a medicine to be taken internally, and the other a liniment for external application; an attendant, by mistake, rubs a painful part with the medicine, and gives him a tablespoonful dose of the aconite liniment.

Symptoms: burning, tingling, and numbness of mouth, throat, and stomach, extending afterwards through the whole body; sickness of stomach, dizziness, prostration, sometimes convulsions; no delirium, no stupor, unless in quite exceptional cases. Death, from a sufficient quantity, results in a few hours. Less than a half a teaspoonful of the tincture has proved fatal in some instances; a teaspoonful will always be likely to do so, if left long in the stomach.

Treatment.—There is no chemical antidote for aconite. *Vomiting* should be produced at once to get rid of it. In the household, do not wait to send to a druggist, but give immediately a teaspoonful of *mustard*, mixed in a teacupful of warm (not hot) water. Repeat this in ten minutes, with large draughts of warm water, if vomiting does not follow. If no mustard is at hand, a tablespoonful of salt, in a teacupful of warm, not hot, water, will answer the same purpose. Then mix powdered charcoal, a teaspoonful at a time, in water, and let it be drunk; and also very strong tea, freely taken. Let the limbs be briskly rubbed with warm hands, and place hot bottles or bricks alongside of the body and to the feet. If other treatment is used, it should be only at the judgment of a physician, who should be summoned as soon as possible. This remark will apply to *all* cases of poisoning; and need not therefore be hereafter repeated.

Ammonia.—This is the *volatile alkali*. It has the same chemical relations as the fixed alkalies, potassa, soda, and lithia; but flies off into the air when exposed, requiring, unless dissolved, extreme cold or very good pressure to condense it. It is intensely pungent to the taste and to the breathing organs, and acts as an *irritant poison* when taken in large quantities. Two or three teaspoonfuls, at least, of the stronger solution of ammonia will be necessary to cause danger of a fatal result. Aromatic spirit of ammonia might have such an effect, if a tablespoonful or two were swallowed at once. *Symptoms* of such poisoning are, extreme burning and pain in the stomach, with nausea and vomiting, followed by *collapse* (deathly prostration), which may end fatally in a few hours. One case has been reported in which this took place in a few minutes; another, after three days. Its being breathed freely hastens the effect.

Treatment of poisoning with ammonia is like that for other alkalies. Give vinegar and water, or lemon-juice, quickly and largely. Afterwards, olive oil; then milk; or, if no sweet-oil is at hand, milk alone. The vinegar or lemon-juice combines with and neutralizes the alkaline ammonia. Oil makes a soap with it, which is innocent. Milk will then promote the required soothing action, and will also nourish and support the patient.

Arsenic.—Both by accident and through suicidal or murderous intent, this is one of the most frequently fatal poisons. *Symptoms* of arsenical poisoning are complex. It is an *irritant-neurotic* in its action. About an hour after taking it, there are symptoms of faintness, heat of throat, thirst, and burning pain in the stomach. Violent retching and vomiting follow, and the pain extends through the bowels, with straining and severe purging; sometimes with bloody passages. Prostration soon results; with coldness, small, frequent pulse, and great feeling of weakness; not infrequently delirium, convulsions, or even stupor, will precede death. In slower cases, headache, trembling and other distressing nervous symptoms are common. There is, however, considerable variety in the symptoms of poisoning by arsenic. Death results in most cases within twenty-four hours; exceptionally, but rarely, in an hour or less; occasionally, after weeks, or even months of protracted suffering.

Treatment.—If vomiting has not been already copious, give a teaspoonful of mustard or a tablespoonful of salt in a teacupful of warm water; and follow this with large draughts of warm water, in which *magnesia*

has been stirred and mixed. Magnesia is at least a partial antidote for preparations of arsenic. The most effectual antidote is *hydrated peroxide* (sesquioxide) *of iron;* in large doses, in the moist state, and freshly made. This may be prepared by putting *Tincture of chloride of iron* in water (quantity not of very great consequence, use plenty of it), and then adding *aqua ammonia* (solution of ammonia or hartshorn). A thick powder will be thus precipitated;—which, after washing it with clean water, may be given in tablespoonful doses as an antidote for arsenic.

Carbolic Acid.—This is also called *phenol.* It is to coal-oil (petroleum) what creosote is to tar from wood. *Symptoms* of poisoning by either carbolic acid, kerosene, or crude petroleum, are those of an *irritant narcotic.* First there are burning of the mouth, throat, and stomach, pain in the abdomen, vomiting; then great prostration, faintness, coldness; lastly, insensibility and stupor, ending in death. A tablespoonful of the liquid carbolic acid will be pretty sure to cause death, in from half an hour to eight or nine hours. In treatment of this form of poisoning, we must first use an emetic (mustard, salt, or ipecac., with plenty of warm water), and then give the patient large draughts of sweet oil. If that is not on hand, lime-water and milk, freely given, will be likely to do good by shielding the coats of the stomach and bowels from the poison.

Chloral.—*Hydrate of chloral* is the right name of this medicine, which is much used, especially to promote sleep. It is very uncertain in its action upon different people. While some are but little affected by drachm (sixty-grain) doses, others will be considerably narcotized by half as much. Twenty or thirty grains will be an ordinary medicinal dose. Less than a drachm has been fatal in a few instances; *three drachms* would probably almost always kill; although some persons have taken much more with impunity. The *symptoms* of the poisonous action of chloral are merely those of deep narcotism; the victim cannot be roused, and sleeps away to death, in a few hours. *Treatment* of it, in the absence of a certain antidote, consists in the immediate use of an *emetic*, followed by very strong coffee or tea; dashing cold water on the face and chest; if the patient can walk, moving him about, slapping the back and limbs briskly, etc., to keep him awake, as in opium-poisoning; for last resorts, the galvanic battery and artificial respiration. A physician may carefully try the antagonism which probably exists between *strychnine* and chloral.

Chloroform.—This liquid is much used in Europe, but less than ether in this country, as an *anœsthetic*, by being breathed to annul the pain of surgical operations. It is more dangerous, by far, than ether or nitrous oxide, in this mode of employment; and, of course, it should never be taken or given in this way by an unprofessional person. *Symptoms* of chloroform poisoning are those of stupor, from which the patient cannot be roused. This may be preceded by signs of great irritation of the stomach; as chloroform is very pungent and heating when swallowed. *Treatment* requires an *emetic* at once (see Aconite, *Treatment*); and then, as there is no chemical antidote, dashing cold water on the face and chest, and, if it can be obtained, the galvanic battery; as a last resort, artificial respiration.

Copper.—While this metal, when pure, is not itself poisonous, its compounds are; and they are produced by the action on copper of the fluids of the stomach, or by acids and other materials used in cooking, pickling, etc. In this way copper poisoning sometimes occurs, as well as among those working in copper. Mineral water (carbonic acid water, soda-water) dissolves copper; hence reservoirs of that metal, without any, or with only an imperfect, lining of something not soluble, ought not to be used for it. The compounds of copper most often acting poisonously are, *blue vitriol* (bluestone), the *sulphate;* and *verdigris*, the *subacetate* of copper. In large amount taken at once, either of these will cause severe vomiting, pain in the abdomen, and purging; afterwards headache, and, in fatal cases, convulsions or paralysis before death. *Slow* poisoning will result from taking small amounts of copper daily, as in cooked or pickled articles, for a length of time. Symptoms of this are, a coppery taste in the

mouth, with parched tongue and throat; nausea, retching, perhaps vomiting; pains in the stomach and bowels; diarrhœa, with straining; weakness, with nervous restlessness; dizziness, cold sweats, cramps, and at last convulsions.

Treatment for rapid copper poisoning (as it is itself an emetic) should consist in giving an abundance of *whites of eggs;* albumen making a harmless compound with copper. *Milk* may be given freely if no eggs are at hand; its effect is of the same kind. For *slow* copper poisoning, the main thing is to *withdraw the cause*, in whatever thing or things it may exist. Then, a milk diet, with moderate doses of an opiate, as paregoric, or small doses of laudanum, to assuage the pain and diarrhœa, will be suitable.

Corrosive Sublimate.—This, the chloride of mercury, is a deadly poison; three or four grains of it may kill a man. *Symptoms* of its action are, in a marked degree, those of the irritant poisons; a metallic taste, burning in the mouth, throat, and stomach, pain in the abdomen, vomiting, purging, with straining, nervous anxiety, extreme prostration; often convulsions, sometimes stupor, before death. Commonly, death does not result under one or more days; but examples are recorded of its taking place within an hour after the poison had been swallowed. *Treatment* of corrosive sublimate poisoning requires (as for copper) free administration of whites of eggs; the more the better, until relief is obtained; or, if eggs cannot be had, large and repeated draughts of milk.

Fungi.—*Mushrooms* and *Truffles* belong to this group of plants; both being largely eaten, and agreeing with most persons Botanists inform us that there are many species of innocent and nourishing fungi; but there are some, also, that are dangerously poisonous. While, then, the *general rule* is, that those whose color is not dark, nor taste harsh, nor odor disagreeable, are harmless, *experiments* are not safe in such a matter, when made by those ignorant of the kind they have found. The true *eatable mushroom*, *agaricus campestris*, grows on open ground, has *pink* "gills" or frilled arrangement underneath its crown, a small "ruffle" also on its stem, and a thin skin on top, which can be peeled off easily. The assertion made by some that even this plant is unsafe until cooked does not agree with my experience; as I have often eaten at least a small handful of mushroom plants raw, without any injury. Still, they may under some circumstances be less wholesome, and cooking improves their flavor as well as secures their innocency. *Symptoms* of "toadstool" poisoning are those of irritant poisoning; vomiting, purging, and abdominal pains; with, also, dizziness, partial blindness, delirium, perhaps convulsions and stupor, at least in fatal cases. Generally, the symptoms do not show themselves for a number of hours, if the *irritant* effects are most prominent; but *stupefying* effects have sometimes appeared within an hour or two.

No *antidote* for fungus-poisoning having been ascertained to exist, the proper *treatment* for it is, the use of mustard, salt, or ipecac. as an *emetic*, followed by charcoal and magnesia-water, and then stimulants (ammonia, whiskey, etc.), if required by great debility; lime-water and milk for nourishment (later, beef-tea, etc.); and, if irritation and pain without stupor be present, careful use of moderate doses of some opiate, as paregoric or laudanum, to assuage distress and procure relief.

Lead.—While metallic lead is not poisonous, many of its compounds are so. The one most nearly inert is the sulphate of lead. Hence sulphuric acid, and its salts, as sulphate of magnesium, are antidotes for it. Sugar of lead (acetate of lead) and the subacetate, present in Goulard's extract, which are often used to make lead-water, are sometimes taken poisonously by mistake. Violent vomiting and purging, with very severe pains in the abdomen, followed by prostration, have been the symptoms in such cases; death taking place (if the quantity was very large) in from one to three days. *Treatment* for such *acute* or sudden poisoning by lead, should consist in the use, if vomiting is not copious, of an emetic dose (twenty to thirty grains) of sulphate of zinc, followed by whites of eggs in abundance, milk, and moderate doses of sulphate of magnesium (Epsom salts); with warmth applied to the

body, and opiates (as paregoric or laudanum) to relieve pain when the most urgent symptoms have been overcome.

Opium.—*Symptoms* of any kind of opiate poisoning are: in not very excessive dose, at first a short period of excitement; in overwhelming dose, this is absent and the deep stupor comes almost at once; with closed eyes, whose pupils, if the lids be raised, are seen to be contracted; pulse slow and full; breathing snoring (stertorous); face flushed and skin warm, until near the end, when pallor and coldness precede death. The slowness of the breathing in bad cases is very remarkable. The condition on the whole bears a close resemblance to *apoplexy*, *dead drunkenness*, and *compression of the brain* from fracture of the skull. In neither of these, however, are the pupils contracted as in opium-poisoning. Death usually follows within from seven to twelve hours.

Treatment of opium-poisoning calls first for an *emetic;* a teaspoonful of mustard, a tablespoonful of salt, or a teaspoonful of ipecac., in warm water, should be poured down the throat at once, if the patient can swallow. When this is not possible, a physician will use a *stomach-pump*. Also, cold water should be dashed upon the face, and the patient's body may be slapped vigorously, or, if he can, he may be made to walk about; anything to *keep him awake*, or from sinking into the fatal degree of lethargy.

Phosphorus.—This substance, a small portion of which is always naturally present in our brains and in our bones, is, when in the separate state, a most destructive poison. It acts rapidly; when, for example, ends of lucifer matches are swallowed, through mistake or malice. It is known also to act slowly, in producing disease of the jawbones, with those engaged in making lucifer matches. *Symptoms* of acute or rapid phosphorus poisoning usually begin to appear a few hours after it is taken. There is a garlickly taste, with burning in the throat, pain in the stomach, violent vomiting, sometimes purging; coldness, prostration, and either convulsions or stupor before death, which may follow in from one to five or six days. The amount necessary to kill an adult is less than a grain. A child two years old is reported to have died in consequence of swallowing the ends of eight friction-matches; and two of these have killed an infant two months old.

Treatment of phosphorus poisoning must be conducted without any known antidote, unless old *spirit of turpentine*, in teaspoonful doses, be such, as some have asserted. First give an *emetic* with plenty of warm water; then *charcoal and magnesia-water*, abundantly. No *oil* (unless oil of turpentine, as above said) is to be given after phosphorus poisoning; oil dissolves and diffuses it more rapidly. Rice-water, milk, or flaxseed-tea will be suitable to allay irritation, in a case which escapes death.

Infancy and Childhood.

Nourishment.—Every mother should, if she can, nourish her own child, from her own breast. This is nature's law, as well as the law of love.

Some mothers, unfortunately, *cannot* furnish nourishment for their offspring. Either they have no milk, or very little, so little that a child cannot live on it; or they are in such feeble health that it will risk *their* lives to afford it; or indisposition may make their milk unfit, unsafe for nourishment. What then?

The usual resort is to the *bottle*. First, however, ascertain whether the mother has not *some* good milk, even though not enough. If she has *half* enough (as is the case with quite a number) let her give the babe the benefit of this, if it lasts, until the child has passed through the most of its teething, or at least has weathered its first summer. Let her nurse it two or three times in the day and evening, and give it (or have given to it) the bottle for the rest of the time.

Indeed, it is a good plan, under all circumstances, for a child six months old to *learn* to use bottle-food, so as to make the change more easy later, especially if illness or some other cause should oblige the mother to wean it suddenly.

Weaning.—This never should be sudden, if it can be helped. If a mother can nurse her infant a full year, it will be well; if eighteen months, still better. When she has, up to two years, half enough for it, let it get what it can from her, and eke out the

REMOVING THE IRONS FROM THE INSANE

The opening of the 19th Century was marked by a kinder treatment of the insane. They were no longer manacled, but placed in pleasant surroundings. This scene represents Doctor Pinel, in the first great French Hospital, ordering the chains to be removed from an insane patient. Through his efforts, with the

rest with outside nourishment. Never let a child be weaned in *summer* if it can be helped.

Bottle-feeding.—The bottle is vastly better than the spoon. It imitates nature better; it allows the food to go more slowly into the stomach; and it gives the infant desirable exercise in taking it. Get a glass bottle, holding about half a pint, with a rubber nipple, but without a tube. Two bottles, or at least two nipples, will be well to have, for alternate use and thorough cleansing of both. For a babe less than a month old, half a bottle at once will do for a meal. In a few months, it will readily take nearly or quite a whole one, several times a day. A child six months old can, and ought to, appropriate three pints of milk or more in twenty-four hours. Remember a child has to grow as well as to live. When too much has been swallowed, it will often (and had better) be *thrown up*. If it be milk, this is then usually *curdled*. Untaught persons are frightened at this; but the fact is that milk is *always* curdled at the beginning of digestion. The natural acid of the stomach acts upon it.

After each time of use, the bottle ought to be *scalded* (that is, washed out with hot water); in summer time, or where the child is delicate, an added precaution is to add soda to the water with which it is cleansed.

Milk.—Cow's milk is almost the only kind used in this country for infants; here and there, goat's milk may be had. Cow's milk is *stronger* in "solid" contents than woman's milk, but the latter is sweeter. Commonly, then, during the first months, a little pure water is added (half, or less, of the amount of milk), and a little white sugar. As the child grows older, less water is needed, and within the year often, none at all. A great mistake was formerly made, in mixing two pints of water with every pint of milk; the poor things sometimes, no doubt, starved under such a regimen.

But, sometimes, the *thicker* and *harder* curds made in the stomach with cow's milk may be difficult for the babe to digest. It becomes colicky and fretful, or it refuses the bottle. Then we must add rather more water, and something else to help to diffuse the clots, thus keeping them from forming solid masses.

Starchy materials will do this pretty well. Such *alone* will not nourish a child fully; arrowroot, farina, and other starches contain *no nitrogen*, and some of this element is indispensable for the growth of muscles, bones, and brains. Moreover, during the first three or four months very little saliva or pancreatic juice is formed, and, without these, starch is not digested. But the *mechanical* qualities of starch fit it for mixing up the casein and albumen of milk in the fluids of the stomach, and so promoting its digestion.

What May be Used with Milk.—Simple articles, especially barley, rice, and oatmeal, are commonly available for this purpose. Either of them does best when ground (or beaten in a mortar) to a fine powder for use. *Barley*-water answers well when the bowels are about right (that is, from two to four *moderate*, *natural* passages daily); *rice*, when there is diarrhœa; *oatmeal*, when the child is "bound," or not free enough in the bowels.

For barley-water, a teaspoonful of barley-meal for a two or a three months' old infant, two teaspoonfuls for one over six months, may be mixed with a tablespoonful or two of cold water, and then put into a pint of water. Bring this to the boiling-point, and *boil it down* to half a pint. Strain it through a fine sieve or a clean linen cloth, and stir it in with a pint of milk, adding a little salt, and an even teaspoonful of granulated white sugar. Put what is not used at once, in a cold place (on ice, if it be summer time, or in the spring-house in the country) to keep for the next feeding-time. Never give milk twenty-four hours old to a young child, under any circumstances.

Rice and oatmeal may be prepared in the same way, and used according to the state of the child's bowels, *when milk alone does not appear to digest well*. Should neither of these simple additions meet the difficulty, you may safely try some of the "infants' foods." Mellin's, Horlick's, Nestle's, and Imperial Granum are, among the best. These "foods" are not, like arrow-root, sago, and tapioca, merely *starches*. They contain some also of the *nitrogenous* materials.

It is not necessary, indeed it is hardly desirable, to ask a dairyman to furnish only the milk from one cow. You must know the cow very well to be sure that its milk is the best. A *good dairyman* is the best dependence of all; and there is no harm in mixing the milk of several cows, all equally fresh. What ought not to be done is to mix *two days'* milks together. Thorough scouring of the pans, and keeping milk in a pure atmosphere (as well as a cool one), are of extreme importance.

When milk is served only once a day in hot weather, it had better be brought at once to the boiling point—to make it keep better,—and then set in the coolest and cleanest part of the house; best of all, put on ice.

A young infant, under a year old, had better take all its food *warm;* unless in the torrid heat of our midsummer. With the thermometer from 95° to 98°, one does not, young or old, want anything warm, inside or out.

If there be a sour smell on the breath, or sourness of the curds thrown up, or colicky pain after feeding, or beginning looseness of the bowels, *lime-water* should be added to the bottle-food. A tablespoonful to the bottle will not be too much. It is always harmless, if the bowels are not constipated; and it often does a great deal of good. When *very* tough curds are formed after taking cow's milk, a pinch of *soda* (bicarbonate) will help to dissolve them still more effectually than lime-water or the starch foods. But soda must be used in *small* doses, and *occasionally* only. Lime-water may be, if called for, an every day remedy for sourness of stomach, especially with a disposition towards diarrnœa.

For *thirst*, between feeding-times, in summer weather, the best plan is to give cold water moderately, and supply from time to time a soft clean rag containing pounded ice for the child to suck. When a sick child has fever, however, it may often need to drink a good deal of water.

Clothing for Infants.

Let the clothing of infants, from birth, be warm enough and loose enough for comfort. No tight bands should ever be put on them. Some parents, in over-anxiety about cold, put on three times as much as is needed, and then shut all their chamber and nursery windows and doors, with big, hot fires; wondering, then, that their babies are fretful, get skin diseases all over, and often seem to catch cold almost every time they are taken out.

Babies resist actual cold less safely than older persons; but just *enough* clothing is always better than too much for them. And they do not need to have the rooms they live in any warmer than we do—say 68° to 70° Fahr. usually. They are also more hurt by close, foul air than grown people are.

When they are old enough to wear short clothes, a common mistake has been of an opposite kind: to leave their arms and legs bare; they are so pretty thus! But many an attack of croup and of inflammation of the lungs, sometimes fatal, has followed such exposure in a chilly atmosphere. Children should have no less protection of their limbs from cold than men and women. Even though, when healthy and active, they do not seem to feel it; it is not safe.

Very important is the *changing* of clothes with infants. When their thighs are wet, and all next to them is soiled, they should be changed *at once*, always. Neglect of this may cause chafing of the skin, very disturbing to the child, and sometimes as bad as a burn. A soft sponge is, when the skin is tender, better than a rag or towel; but a sponge must be *well cleansed* every time, with soap and hot water, to be used again. Dusting with a little "pat" filled with fine starch or arrow-root powder is very soothing and protective.

When the skin has become sore about the thighs, the child will show it by a sharp cry on wetting itself. Redness also, as well as tenderness to the touch, will be found on examining it. Then *tallow, cold cream* (of the apothecary), or *oxide of zinc ointment*, should be applied gently every night and morning (or oftener if need be) after changing it. The worst cases, such as come only from considerable neglect, may need to be treated like burns, with soft rags, wet with lime-water and sweet oil (equal parts, mixed), and covered with oiled silk.

Babies, as well as adults, should have the head kept cool, and the feet warm. Out of doors, a cap is all right—thick or light according to the season; but there is no need of any cap being worn in the house. They are better without it.

A frequent trouble is with the bed-covers at night. First, never forget that covering *makes no warmth* of itself, It only keeps (by non-conduction) what warmth the body has of its own. So, if a baby is put cold into a cold bed, especially if it be sick, it may scarcely get warm all night. In that case the bed-clothing should be warmed first; by passing a hot flat-iron under and over it; or, for an ill baby, keeping a warm brick or bottle or tin of hot water in the bed while needed.

Restless children will often fling and kick the bed-covers all off at night; and this exposes them to taking cold. Watching them all night is hard service. Much better will be the canton-flannel night-gown, sewn up tight (like mittens) at the ends of the hands and feet. If they do throw everything else off, this will keep them still pretty warm.

Must infants always wear flannels in the daytime? Delicate ones certainly should, in our climate; thick (though soft) flannel in winter, and light flannel in summer time. When an infant shows itself, at two or three years of age, to be hardy, its summer flannel may be left off safely. *Silk*, or merino, will do for all but weakly children.

Bathing.—A new-born child should be bathed only in *warm* water, in a warm room. From 95° to 90° should be the temperature of its bath; the thermometer had better be used, as the touch is so uncertain. As it gets older, at least if it seems "hearty," the water may be allowed gradually to go down to 85°; or, in warm weather, even 80°. The best test of its not being too cool, is, the infant being rosy and merry after the bath. A child should like its bath, if it is rightly managed; never startling it with a sudden plunge, but accustoming it to it by degrees. A mother had better bathe her own baby, if she is well and strong enough to do so.

One error especially to be avoided is, letting a child, once wet all over, sit *half in* and *half out* of the water; being thus chilled by evaporation from the uncovered part of the body.

During our *hottest* weather, when the thermometer ranges between 94° and 100°, even a young infant may profit by a cool bath, say at 75° or 70°; but then it must be a *short-time* bath also. The cooler, the shorter the time of immersion.

Much soap does not need to be used in bathing infants. If the child be bathed daily, it needs (after its *first* thorough cleansing) only an occasional employment, unless about the thighs, of a little of the best castile soap. *Salt* may be added to the bath if the child is weakly, for its tonic effect. In *sickness*, *warm* or *hot* baths may be of great service.

Exercise.—After the first few months, a babe should be allowed and encouraged to *sprawl;* first on a wide bed, being watched that it does not fall off; afterwards on a carpeted floor, or a rug. This will spread its chest, and bring most of its muscles into play. Thus it will gain strength, and get ready, in due time (*don't hurry it*) to stand up and walk. Crawling comes first, according to the true nature of bodily development,

Airing.—*Very soon* every baby ought to begin to be taken out in fine weather. In summer, no matter how soon; in winter, it requires care about keeping it warm, of course. But quite young infants may be, with proper out-of-door clothing, accustomed to being taken out into the sunshine and air every fine day.

A nusery ought to be always a *sunny* and *well-aired* room. As already said, infants suffer more harm from bad air than grown people do. Scarlet fever, measles, whooping-cough, diphtheria, and all other diseases are commonly worst, killing the most children, in tenement-houses; and, elsewhere, in crowded alleys, where people live too close together and do not have fresh, pure air to breathe.

Sleep for Children.

For the first month or two, an infant naturally sleeps more than half its time. All through the first year, many babies sleep from twelve to sixteen hours in the

twenty-four. It is a grand thing for all concerned when the little one can be trained early to sleep *most of the night*. Habit may be formed, in such matters, very soon.

Lay the child down to sleep, from the start; do not get it used to being carried about to go to sleep in somebody's arms. Put it to sleep in its crib, alone as a rule. Hard to believe as it seems, some weary slumbrous mothers have *overlain* their babies; that is, rolled upon them while asleep and suffocated them. Moreover, the vapors from another human body make the bed less wholesome for the child. Yet, with a *wide* bed, convenience may sometimes afford reason for a child being laid beside, but not too near, its mother or nurse.

Never rock a child in a cradle. This has, happily, quite gone out of fashion. If it has any effect, it is by causing a kind of a dizziness (like seasickness) which cannot be good for the child.

Let the baby soon get used to going to sleep in the dark. Otherwise, when it gets older, it will be afraid to do so, with a fear often very hard to overcome. Put *no curtains* about a bed, for a child or grown person.

Most babies, when they do sleep well early in the night, wake very early in the morning, and then want food. Before noon they are apt to be ready to take a nap of two or three hours. Some will also want an afternoon nap of an hour or two. Let them sleep all they will; sleep and grow fat. Never wake a young child (or indeed an older one) suddenly; it jars their brains. When their sleep is out they will wake up of themselves.

Teething.

Mothers and nurses ought to know what to look for in their babies' mouths, as the months follow each other in their first two years. Only twenty teeth, be it remembered, come in the first set, or, "milk teeth." Thirty-two follow these, and take their place, in the second set.

About the end of the sixth month (from the fifth to the eighth), it is common for the two *lower middle front* to appear through the gum; and not long after, even sometimes before these, the two *upper middle* front ones. These are called *cutting* or incisor teeth. So are the next to come out —alonside of the first—the lateral incisors (side cutting teeth), below and above; which appear between the eighth and the tenth months. Before the infant is a year old, then, it usually has at least *eight front teeth* out; four below and four above.

Next, we might expect those nearest these to appear; but they do not. Instead come the *first jaw* or molar teeth—two below and two above—between the twelfth and the fourteenth months.

Then follow, between the fourteenth and twentieth months, the stomach and eye teeth, as people call them; the four canine teeth, two below and two above; pointed teeth.

After these, and last of the first set, come the *second jaw* or molar teeth; two below and two above; between the eighteenth and the thirty-sixth months. In each jaw, in all, there are then four incisors, two canines, and four molar teeth; doubling these, we get the twenty of the whole set. The following diagram shows this, with the order of their succession:

5	3	4	2	1	1	2	4	3	5
M	M	C	I	I	I	I	C	M	M
M	M	C	I	I	I	I	C	M	M
5	3	4	2	1	1	2	4	3	5

I stands for *incisor;* C for *canine;* M for *molar*.

This order is the *generat* mode of succession; but variations from it are far from rare. Often the upper teeth, front and all, come before the lower ones. The time for each group of teeth is frequently later, and sometimes earlier, than that above mentioned.

As the time comes near (about the sixth or seventh year) for the second dentition, the new set, whose germs were in the jaws at birth, grow steadily larger in the gums. The milk teeth are *not forced* out; but, under the wonderful natural adaptation of parts, their fangs are gradually absorbed, and thus they loosen and drop out, or are easily taken out, and make way for the second set of permanent teeth. These are

thirty-two in number. The first to come through the gums are the first molar or jaw teeth. Next, at about seven years of age, the middle incisors; then the lateral incisors, at or near the end of the eighth year. After these, the first pre-molars (bicuspids) or lesser jaw teeth; and in the ninth year, the second pre-molars. Between eleven and twelve years, the permanent canines, two above and two below. From twelve to thirteen or fourteen years, the second molars; and from seventeen to twenty-one years, the last molars, or *wisdom teeth*. These last are often imperfect from the start.

Dentition is a process of *growth*. A great deal of blood is needed in the tissues of the jaws for this purpose. Moreover, for the teeth to "come out," the gums must give way, by absorption. Should this be slow, a *tension* of the gum may occur; and, through the nerves, the whole system may be brought into sympathetic excitement. As the nervous apparatus is much more irritable, more easily disturbed, in babyhood than in adult life—we often have, from this cause, worrying; fretfulness; sometimes fits, or *convulsions*. A child which was "always good" before, now may cry a great deal, losing its reputation for goodness altogether.

Why Babies Cry.

A word here about babies' crying. A *healthy* child, not teething, *if well taken care of, will very seldom cry*. If it becomes very hungry, and is not nourished, or is cold, or too warm, or is left with garments soiled and wet, *of course* it cries. And, the habit once formed, cry it will, though the whole household and neighborhood regard it as a "crying evil."

Several sorts of crying may be observed, which it is desirable to understand. First there is the cry of surprise, on the child being first ushered into the world. That is all right and natural.

Next, comes the *calling* cry, of hunger, thirst, or other *want*. Sharper and shriller, sometimes a violent *scream*, is the cry of *pain;* as of colic or earache; or of fright, as when a babe rolls out of its bed or crib upon the floor. Much like the cry of simple want, but habitually harsher in manner, is that of *demand* or *command*, of a child already *spoiled;* finding that *whatever it cries for it will get*. An aggravation only of this, is the (sometimes fairly impish) roar and succession of screams, of *temper* and *passion*. *Disease* has various cries; according to its character. Sometimes it is only a faint moan, attending nearly every breath. Other times it is hoarse, as in croup; along with a short, barking cough. Or it may be the wild scream of inflammation of the brain.

What Teething Is.

Teething is not a disease, a morbid process, at all. But it is an important change, which for the time renders the child more than before or after *liable* to disorders, under any disturbing causes; and the process of penetration of the gums by the young teeth *may* sometimes itself be imperfectly accomplished. The most common and least alarming effect of the "sympathetic irritation" of teething is *diarrhœa*. This seems often to give a *safe vent* and relief to the disturbance of the system. Three or four, or even five passages from the bowels daily, at such times, are not objectionable; are much better than constipation. *Convulsions* are frightful to behold, and attended by danger.

Here, however, it may be suitable to refer briefly to *lancing the gums*. Healthy babies may often pass through their teething without needing to have their gums lanced. But some may be, by this simple and harmless means, kept from having convulsions, which, if brought on, may threaten their lives. Use a *clean*, sharp lancet, and divide the gum with a straight, firm cut; in the direction of the edge if it be an incisor, and across the crown if a molar tooth; and then there will never be any "scars" or other trouble.

It is well to lance the gums whenever they are much *swollen*, *red*, painful, and *worrying*, to the child, making it nervous and hard to get to sleep; or when, even though not swollen, the tooth is evidently not far within the gum, which seems tense, and a source of irritation, calling for relief. Many a child, once helped by this measure, will ask for it, with looks if it has no words, to have it repeated.

A lesser, but not unimportant means of relief for worriment of the mouth during teething, is the use of rubber rings, bits of ivory, etc., smooth and firm, but too large to swallow, for the child to bite upon. When there is much heat of the mouth, a soft rag filled with pounded ice will, in summer time, do the most good.

At no time is it more needful than during dentition, to be very careful about the *food* which the child takes. Indigestion is a very common exciting cause of convulsions.

Summer Dangers.

In our American cities, hot weather kills more young children than any other cause. Look at the weekly record of deaths in New York or Philadelphia, and you will find that every degree of noon temperature above 95° costs scores if not hundreds of little lives. In those cities, about one-half of the deaths of children in the first year of life, and nearly one-third of those in the second year, take place in June, July, and August.

High heat, *crowding*, *filth*, and *unsuitable food*, conspire against children in the summer homes of the city poor. But the rich may suffer also, from *excessive heat*, *town air*, and *improper diet*, for their children; and these causes produce many cases of *summer complaint*, or "cholera infantum."

Whoever, of our city families, can take their infants out into the country, during their first, second and third summers, for the months of June, July, August, and September, ought to do it. With those who cannot, the next best thing is to take or send them out on frequent excursions, on land or water, and to have them often in the open parks or squares; for as much *pure*, *cool* air as they can get. It is the best preventive, and often the best curative, of summer complaint.

For those who are obliged to live in the crowded parts of towns or villages, the rules given by the Obstetrical Society of Philadelphia "for the management of infants during the hot season" have proved serviceable. I will quote them here, in addition to what has been already said on our previous pages on the same subjects.

Rules for Management of Infants.

Rule 1.—Bathe the child once a day in tepid water. If it is feeble, sponge it all over once a day with tepid water, or with tepid water and vinegar. The health of a child depends much upon its cleanliness.

Rule 2.—Avoid all tight bandaging. Make the clothing light and cool, and so loose that the child may have free play for its limbs. At night, undress it, sponge it, and put on a slip. In the morning remove the slip and dress the child in clean clothes. If this cannot be afforded, thoroughly air the day-clothing by hanging it up during the night. Use clean diapers, and change them often. Never dry a soiled one in the nursery or in the sitting-room, and never use one for a second time without first washing it.

Rule 3.—The child should sleep by itself in a cot or cradle. It should be put to bed at regular hours, and be early taught to go to sleep without being nursed in the arms. Without the advice of a physician, never give it any *spirits*, *cordials*, *carminatives*, *soothing-syrups*, *or sleeping-drops*. *Thousands of children die every year from the use of these poisons*. If the child frets and does not sleep, it is either hungry or ill. If ill, it needs a physician. Never quiet it by candy or cake; they are the common causes of diarrhœa and other troubles.

Rule 4.—Give the child plenty of fresh air. In the cool of the morning and evening send it out to the shady sides of broad streets, to the public squares, or to the park. Make frequent excursions on the rivers. Whenever it seems to suffer from the heat, let it drink freely of ice-water. Keep it out of the room in which washing or cooking is going on. It is excessive heat that destroys the lives of young infants.

Rule 5.—Keep your house sweet and clean, cool and well aired, In very hot weather let the windows be open day and night. Do your cooking in the yard, in a shed, in the garret, or in an upper room. Whitewash the walls every spring, and see that the cellar is clear of all rubbish. Let no slops collect to poison the air. Correct all foul smells by pouring carbolic acid or

quicklime into the sinks and privies. The former articles can be got from the nearest druggist, who will give the needful directions for its use. Make every effort yourself, and urge your neighbors, to keep the gutters of your street or court clean.

Rules for Diet of Infants.

Rule 6.—Breast-milk is the only proper food for infants. If the supply is ample, and the child thrives on it, no other kind of food should be given while the hot weather lasts. If the mother has not enough, she must not wean the child, but give it, besides the breast, goat's or cow's milk, as prepared under Rule 8. Nurse the child once in two or three hours during the day, and as seldom as possible during the night. Always remove the child from the breast as soon as it has fallen asleep. Avoid giving the breast when you are over-fatigued or overheated.

Rule 7.—If, unfortunately, the child must be brought up by hand, it should be fed on a milk-diet alone, and that, warm milk out of a nursing-bottle, as directed under Rule 8. Goat's milk is the best, and next to it, cow's milk. If the child thrives on this diet, *no other kind of food whatever should be given while the hot weather lasts.* At all seasons of the year, but especially in summer, there is no safe substitute for milk to an infant that has not cut its front teeth. *Sago, arrow-root, potatoes, corn-flour, crackers. bread, every patented food, and every article of diet containing starch, cannot and must not be depended on as food for very young infants.* Creeping or walking children must not be allowed to pick up unwholesome food.

Rule 8.—Each bottleful of milk should be sweetened by a small lump of loaf-sugar, or by half a teaspoonful of crushed sugar. If the milk is known to be pure, it may have one-fourth part of hot water added to it; but, if it is not known to be pure, no water need be added. When the heat of the weather is great, the milk may be given quite cold. Be sure that the milk is unskimmed; have it as fresh as possible, and brought very early in the morning; Before using the pans into which it is to be poured, always scald them with boiling suds. In very hot weather, boil the milk as soon as it comes, and at once put away the vessels holding it in the coolest place in the house —upon ice if it can be afforded, or down a well. Milk carelessly allowed to stand in a warm room soon spoils, and becomes unfit for food.

Rule 9.—If the milk should disagree, a tablespoonful of lime-water may be added to each bottleful. Whenever pure milk cannot be got, try the condensed milk, which often answers admirably. It is sold by all the leading druggists and grocers, and may be prepared by adding, without sugar, one teaspoonful, or more, according to the age of the child, to six tablespoonfuls of boiling water. Should this disagree, a teaspoonful of arrow-root, of sago, or of corn-starch to the pint of milk may be cautiously tried. If milk in any shape cannot be digested, try, for a few days, pure cream diluted with three-fourths or three-fifths of water—returning to the milk as soon as possible.

Weaning the Infant.

Rule 10.—The nursing-bottle must be kept perfectly clean; otherwise the milk will turn sour, and the child will be made ill. After each meal it should be emptied, rinsed out, taken apart, and the tube, cork, nipple, and bottle be placed in clean water, or in water to which a little soda has been added. It is a good plan to have two nursing-bottles, and to use them by turns.

Rule 11.—Do not wean the child just before or during the hot weather, nor, as a rule, until after its second summer. If suckling disagrees with the mother, she must not wean the child, but feed it in part out of a nursing-bottle, on such food as has been directed. However small the supply of breast-milk, provided it agrees with the child, the mother should carefully keep it up against sickness: it alone will often save the life of a child when everything else fails. When the child is over six months old, the mother may save her strength by giving it one or two meals a day of stale bread and milk, which should be pressed through a sieve and put into a nursing-bottle. When from eight months to a year old, it may have also one meal a day of the yolk of a fresh and rare-boiled egg, or one of beef- or mutton-broth into which stale bread has been

crumbled. When older than this, it can have a little meat finely minced; but even then milk should be its principal food, and not such food as grown people eat.

When an infant's bowels do not act, at least once or twice, freely, every day, *sweet* (olive) *oil* may be given, a teaspoonful at once; or *manna*, a quarter of a teaspooful at a time (it is sweet and easily taken); or *simple syrup of rhubarb*, a teaspoonful at once; or *glycerine*, a teaspoonful at a time. If the stomach is sick at the same time, *magnesia* may do more good, a quarter or half a teaspoonful, according to the age of the child, stirred well up in a little water. If colic is present, *castor oil*, a teaspoonful mixed with two teaspoonfuls of *spiced syrup of rhubarb* wil be the best thing to open the bowels.

THE LAWS OF HYGIENE

How to Keep Well.

In the pages over which we have passed, our effort has been, as the reader will perceive, to describe the various ailments with which man is afflicted and the accidents or injuries to which he is liable; also, the remedies to be applied or the methods to be adopted in the treatment of the sick or the injured. This, while a great part of the story, is not the whole story. There is a further very important phase of the subject. It is one thing to know how to get well; it is another to know how to keep well. There is a science of health as well as a science of sickness. The former we call hygiene. This deals with the rules to be observed to enable us to avoid ill-health. These are of the highest importance, and it is incumbent upon us here to give the leading laws and principles of hygiene science.

The world we dwell in is full of the seeds of disease. They come to us in the food we eat, the water we drink, the air we breathe. We cannot stir abroad or confine ourselves at home without exposing ourselves to some unwholesome condition. The germs of disease lurk everywhere. We may escape them in part, but cannot altogether. But what effect they will have upon us depends largely upon ourselves. A sound, vigorous constitution and healthy normal condition of the organs of the body, enable us to expose ourselves, with impunity to conditions which might prove fatal to those of feeble powers of resistance or weakness in some of the vital organs. Therefore, in addition to care in avoiding exposure to injurious influences, it is very important to strengthen our powers of resistance by a reasonable amount of exercise, the breathing of fresh air, attention to suitable clothing, heedfulness of any organic weakness, and everything adapted to give us strength and powers of endurance.

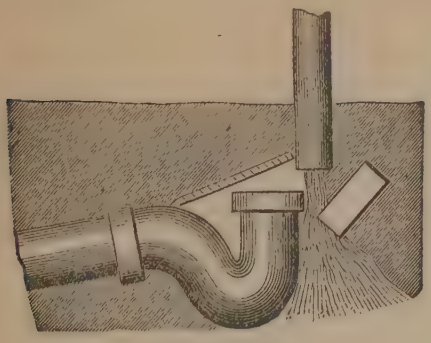
Impure Air.

The air which we breathe is rarely quite pure, and is often very impure. This is especially the case in city life and within our houses. Pure air is only to be found in the open country, the mountains, or at the sea-side. In addition to its normal oxygen and nitrogen, many other gases make their way into it, some of them, being very unhealthful. There are also solid particles of "dust," of a great variety of materials, animal, vegetable, or mineral, many of them more or less harmful. The worst of them are the floating bacteria, living germs of disease, which inhabit air and water alike; the great majority of these are harmless, some of them are deadly in their effects.

Of the impure gases in the air, some of the worst are of our own production. We are constantly breathing out matter which is poisonous to the system if breathed in again. This is largely carbon dioxide (or carbonic acid gas), with small quantities of organic poisons, the waste of the system.

We can easily understand how it is that pure air becomes poisoned by respiration, the specially dangerous products being the carbon dioxide and the organic matters. The total amount of carbon dioxide breathed out in an hour is about 6 cubic feet. While this is an injurious gas, it is probable that

the bad effects of breathing respired air are more due to the poisonous organic matter, as it is found that while an artificial atmosphere containing 1 part of carbon dioxide



MISPLACED PIPE.

in 100 of air causes but little discomfort when breathed, yet if an already respired air containing only 1 part of carbon dioxide in 1,000 of air is breathed much discomfort is experienced. This organic poison is probably composed partly of an organic vapor from the lungs, and partly of solid matter from the lining of the mouth and air passages. It is difficult to find out the exact quantity of organic matter present, but it varies exactly in proportion to the quantity of carbon dioxide, and the amount of this in respired air is therefore taken as the standard of impurity.

The Air from Sewage and Sewers.—This is found to contain a great diminution of the oxygen, a large increase of the carbon dioxide, and many other gases, such as sulphureted hydrogen, sulphide of ammonium, marsh-gas, etc. A more harmful constituent is found in the numerous germs present, which are probably thrown into the air of the sewer by the bursting of bubbles on the surface of the putrefying sewage.

The air from churchyards contains carbon dioxide in excessive amount, various vapors of ammonia, offensive and putrid gases, and many germs.

Air polluted by Trades.—These impurities depend, of course, on the nature of the trade. We may have hydrochloric acid, sulphur dioxide, sulphurous acid, ammonia, and sulphureted hydrogen from chemical works; carbon dioxide and monoxide and sulphureted hydrogen from brickfields; nauseous organic vapors from glue refining, bone burning, fat boiling, candle making, and slaughter houses; and various vegetable and mineral impurities from near works where cotton, linen, flint, or iron particles are thrown into the atmosphere. Nor must we forget the air of workrooms polluted by various products of manufacture, such as lead, phosphorous, flax, etc.

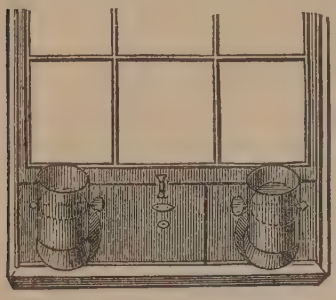
The air of towns must necessarily be very impure, owing to the presence of the injurious products given off by combustion, respiration, sewers, and trades; we find a lessened amount of oxygen, an increased amount of carbon dioxide, and a fairly large amount of solid matter, both inorganic and organic. It is also found that it is especially in the narrow streets of crowded parts of the town that the atmosphere is particularly foul. In the open spaces and wide streets the impurities are not nearly so great.

In close rooms the air is made impure by products of combustion (as from the burning of gas) and by respiration; the impurities thus caused may be very great, even to the extent of 3 parts of carbon dioxide in 1,000 of air. In a room in Leicester, containing six persons, with only 51 cubic feet of air space each, and with three gaslights burning, the amount of carbon dioxide was found to be over 5 parts per 1,000 of air.

Diseases Due to Impure Air.

Respiration.—The effect upon most people of breathing over-respired air is to cause heaviness, sleepiness, headache, giddiness, fainting, and sometimes vomiting. When the air is still more impure death may result, as in the case of the 146 prisoners kept in the Black Hole of Calcutta, for a single night, of whom 123 died; and also when 150 passengers were shut up on a very stormy night in a small cabin of the steamer *Londonderry*, of whom seventy died before morning. The breathing of impure air day after day causes people to become pale, lose their spirits, strength and appetite, and, as a result, they easily contract any infectious disease which is in the district: and this

remark especially applies to consumption, which is particularly common in communities, who live in bad impure air, and the frequency of which tends to diminish in proportion as the air habitually breathed is improved.



A GOOD VENTILATOR FOR A ROOM.

Combustion.—The solid particles of carbon from the smoke of fires, and the fumes of burning sulphur, are harmful to the respiratory apparatus. The gaseous products, such as carbon dioxide and carbon monoxide, may cause death if present in large quantities, and even in small quantities cause pallor, headache, heaviness, and oppression.

Sewer Gas.—If an atmosphere is very largely contaminated with sewer gas, death may occasionally result. In smaller quantities this form of impurity will cause sleepiness, headache, loss of appetite, vomiting, diarrhœa, colic, and prostration. Diarrhœa, typhoid fever, and almost certainly diphtheria are not uncommonly set up by sewer gas getting into houses, but at present there is no certain proof that scarlatina can be caused in this way. The air coming from rivers polluted with sewage, or from land on which sewage has been thrown, has been known to cause dyspepsia, and even dysentery.

Other Causes.—The air from marshy or newly-broken ground is apt to produce ague. Workmen exposed to the dust arising from various occupations are liable to lung disease. Lead poisoning not unfrequently occurs from lead dust from dyed goods; wool sorters occasionally get a fatal disease called anthrax from germs coming from the wool of animals which have been similarly affected, and various other diseases arise from the unhealthy air of work-rooms.

Diseases Due to Impure Water.

Water is another fertile source of disease, many organic and inorganic impurities making their way into it. It is to the former that its unhealthfulness is generally due. Nearly all water from the earth contains some mineral ingredients, few of which are harmful, some of which are healthful. The waters of many mineral springs serve as remedies for serious disorders of the system. The chief source of water pollution lies in organic impurities, which are carried through the soil from cesspools, manure heaps, and similar sources into wells, or are emptied by sewers into the rivers from which many cities now derive their drinking water.

The lack of sufficient water may also be a cause of disease. The person and clothes are not properly washed, houses and streets are dirty, and the sewers become clogged with filth. As a result there is a general lower state of health of the community, and typhoid fever and diarrhœa may be prevalent.

Vegetable Impurities.—Peaty water, in the absence of a better supply, may be used without much harm, but if the amount of solid matter is great it may even produce diarrhœa. Under this head we must include water containing germs, for although they generally get into the water from the excretions of animals, yet, as we know, they are vegetable in nature. Here we shall meet with the most dangerous kinds of water, causing many fatal epidemics.

Cholera.—Chief among these is cholera, whose germs are now thought to be conveyed only by water. The great epidemic at Hamburg in 1892, was traced to sewage water from cholera patients getting into the river Elbe, which supplies the city with water. The constant outbreaks of cholera which occur amongst the Mecca pilgrims every year are due to the fact that they wash in and drink out of the same wells, thus leading to an enormous mortality. This frequently, perhaps almost wholly, comes from a like distribution of the bacterial germs of the disease by water. Typhoid fever has been traced to this cause in numerous instances. This was the case at Over Darwen in 1874, when a drain containing the excreta of a typhoid patient was blocked, and its contents got in the main pipe of the water supply. As a result, out of a population of 22,000 there were 2,035 cases of

typhoid fever and 104 deaths. In Bangor, in 1882, there occurred an epidemic of typhoid fever, affecting 540 persons out of a population of 10,000, of whom 42 died. This was found to be caused by the excreta

HOW PEOPLE DRINK SEWAGE.

of a single typhoid patient getting into a small stream which discharged into the river supplying the town with water.

Diphtheria is probably conveyed and caused by impure water, but this is not yet absolutely proved. Dysentery is well known in tropical countries to be caused by impure water, as was proved by an outbreak at Cape Coast Castle, where it was caused by the passage of sewage into one of the drinking tanks. Diarrhœa has been caused in epidemic form by impure water, as was shown in the old Salford jail, where the untrapped overflow pipe from a cistern of drinking water communicated with a sewer, and the water had thus absorbed sewer gas, and probably germs.

Mineral Impurities.—A moderate degree of hardness is not harmful, but if the hardness is great dyspepsia and constipation may result. Goitre seems to be due to the presence of magnesium limestone in the drinking water, but this is disputed by some. Iron salts cause dyspepsia, constipation, and headache. Lead salts are especially dangerous, causing colic, paralysis, kidney disease, and sometimes death. These symptoms may occur when the amount of lead does not exceed one-tenth grain per gallon.

Purification of Water.

Fortunately, it is comparatively easy to destroy the injurious organic impurities of water and render it wholesome for drinking purposes. This, it is true, demands a degree of care and precaution which many will not take; and as a result of ignorance and heedlessness, water is almost everywhere a common carrier of disease. The peril of injury from it can be overcome in a measure by the use of domestic filters, composed of charcoal or other substances. These, however, are much more effective in removing the mineral ingredients than the more dangerous organic particles. They also are rarely kept pure and clean, and may become simply breeding places for bacteria.

Boiling.—The only safe way of purifying questionable water in households is by boiling. The disease germs, which can endure unharmed the low temperature of liquid air, are destroyed by boiling water. To make sure, the boiling should be kept up at least ten minutes. An unpleasant effect of this is that it gives the water a flat taste from its loss of air. Some means should be adopted to restore to it the lost air. This may be done in a measure by subsequent filtering, the water slowly trickling down through and absorbing the air.

City Filters.—Of late years many cities have introduced filters on an extensive scale, to purify the total supply and thus cut off this prolific cause of disease at its source. The principal means employed for this are large filter-beds of sand and gravel, though in some cities spongy iron is used with good effect. The result has been highly encouraging in the prevention of epidemic diseases, and filter-beds are likely to be introduced before many years into the water-supply of all our larger cities.

Diseases Due to Food,

Food may in various ways give rise to disease. Over-eating is one source of injury to the system. Part of the food is not absorbed, and may become putrid in the intes-

tines, causing dyspepsia, constipation, or diarrhœa. If the excess consumed is principally in the nitrogenous materials, it leads to an increase of the chemical changes in the body, and the person tends to become thin rather than the contrary. It may cause gouty conditions and disease of the kidneys and blood-vessels. Excess of starchy and sugary foods often causes acidity and flatulence and great fattiness of the body, as is also the case with excess of fatty food.

Deficiency of Food produces gradual loss of flesh and weakness of all the bodily organs, particularly of the heart. The body is, moreover, little able to resist cold and various diseases, and thus half-starved people are easily attacked by fevers and consumption.

Bad Proportion of Food Stuffs.—If food is not given in about the right proportions, various dyspeptic troubles may arise, and the body will not be properly nourished. Similarly, eating food in a hurry, bad cooking of food, and a bad arrangement of meals, the food being taken too often or too seldom, or too much taken at one time and too little at another, will lead to stomach troubles.

Scurvy.—One of the best-known diseases caused by the absence of some essential of a diet is called scurvy. This used to be very common on board ships on long voyages, and was caused either by the great use of salt beef, or (much more probably) by the absence of fresh vegetables containing the necessary vegetable acids. Nowadays fresh meat can be more easily taken on long voyages, and potatoes and lime-juice are freely given, so that sea scurvy is practically unknown. In large towns, however, we very frequently see the same disease, as shown by the sore and bleeding gums and the appearance of blood under the skin like small bruises, and the condition is only found in badly-fed people, who will tell you that they live almost entirely on bread and butter and tea, with meat occasionally, and fresh vegetables sometimes on Sunday. This land scurvy soon disappears when proper food is given.

Rickets is a disease found in young children, and is very largely due to feeding with improper food (such as starchy materials,), and to an absence of fresh air. The child perspires chiefly about the head at night, and the whole body seems to be tender and sore, the ends of the bones becoming soft and enlarged, especially near the ankles and wrists, and deformities of the limbs, such as bow legs or knock knees, may result. If there is any sign of this disease beginning, the child must not on any account be allowed to walk for many months, and he should be given plenty of fresh air, sunlight, and good nourishing food.

Diseases Due to Food Eaten when it has Become Putrid.—It is a curious fact which we cannot explain that some food, such as ripe cheese, game, and "high" mutton is only eaten in a state of decomposition, and yet no evil results follow. Apart from these examples, we know that putrid food ought to be absolutely avoided, as it may cause intense poisoning, with vomiting, diarrhœa, great collapse, and even death. Such cases are, unfortunately, not uncommon from the eating of putrid meat pies, hams, and sausages.

Food Diseased in Itself.—Diseased animals not unfrequently communicate their diseases to man. Thus so-called "measly" cattle and pigs contain in the flesh or muscles innumerable small bladders, which are living animals of a low type. When these are taken into the intestines of man without being killed by thorough cooking they begin to grow, and form tape-worms. Another disease, found often in Germany, Russia, and Sweden, is trichinosis, which is caused by eating pork either raw or not properly cooked. Minute worms live in the muscles of the pig, and these, on getting into the intestines of man, begin to breed in enormous numbers; the young worms then pierce the intestines, get into the blood-vessels and into the muscles, so causing diarrhœa, fever, pains in the muscles, and even death.

Certain diseases in cattle ought certainly to prevent them being used as food; these are infectious inflammation of the lungs of cattle, cattle plague, and consumption in the cow, smallpox in the sheep, and trichinosis and swine fever in the pig. The milk also of cows affected with foot and

mouth disease sometimes causes severe symptoms with very sore mouth and lips, and, rarely, sore hands in children, and it is almost certain that the milk of tubercular (consumptive) cattle will cause consumption in the human being.

Vegetable foods, if putrid and decayed, may cause severe illness, just as may happen with putrid animal food.

Good Food conveying Germs.—This is most frequent in the case of milk, where it has been found that whole districts supplied by one milk farm have been affected with some disease, such as typhoid fever, diphtheria, or scarlet fever, and inquiries have shown that either at the farm or in the milk shop germs of these diseases have got into the milk, either from the air, from sewer gas, or more often from water taken from an impure source, and either added to the milk as an adulteration, or used for washing out the milk cans. These diseases carried by milk, as well as tuberculosis from the milk of tuberculous cows, can be entirely prevented by boiling the milk for at least five minutes before it is used.

Alcohol and Tobacco.—Alcohol is not required by the body, and, as a rule, to which there are few exceptions, people are much better and healthier without it; for instance, it has been repeatedly proved that soldiers can bear the hard labor of war very much better when no alcohol is given to them. In large and repeated quantities it causes many diseases, such as gout, diseases of the liver, heart, brain, and nerves. When taken, it should never be between meals, but only with food; it should never be given to children except when ordered by a doctor, and should never be taken by those who have insanity or drunkenness in their families. In the treatment of disease it is a most useful drug, but here again only to be used by a doctor's order.

Tobacco-smoking is a habit which should never be indulged in by any one under twenty-one years of age. Even after that age it is merely a luxury, and not a necessity, and if practiced in excess it may cause pain and irregularity of the heart, sore throat, dyspepsia, and partial blindness.

Infectious Diseases.

Diseases which may be communicated from one person to another, or from an animal to a man, are known as infectious diseases. Some of these, such as itch, lice, ringworm, hydrophobia, and a few others, require actual contact with a diseased person or animal, and so are called contagious diseases. Some of the other infectious diseases, though actually transmitted in a different way, may also be conveyed by touch.

Animal Parasites.—The commonest attacking the external parts, such as fleas, bugs, lice, and mosquitoes, are generally well known. They cause much irritation, with small lumps on the skin, and scratching leaves many marks on the body. The itch insect is very minute and microscopic, but as the female burrows under the skin and lays her eggs, small papules and pustules form, with very great irritation, and the body may be almost covered with an unsightly eruption. This disease can be communicated by touch to others. The head louse attacks the hair, and may be seen crawling about, or its eggs or "nits" can be seen fixed on to the hairs themselves. It causes much irritation, eruptions on the head, and lumps at the back of the neck.

Some insects are also of injury as conveyers of germ diseases. For instance, it is now known that the germs of malaria and yellow-fever are largely, if not solely, carried by mosquitoes. Flies also carry some diseases from one person to another, especially *ophthalmia*.

The animal parasites attacking the internal parts of the body are numerous. The commonest are tape-worms which get into the body with diseased meat of the cow or pig, and cause much irritation from their presence in the small intestine; the common round worm, about twelve inches long, which also lives in the small intestine; and thread or seat worms in the lower part of the large intestine, causing great discomfort. Very rarely in this country the trichina gets into the intestines and muscles of man from diseased pork. It is not easily killed or expelled if it has once got into the body. The other worms mentioned may be easily expelled by simple medicines, and any discomfort

which they may have caused is thus removed. Another internal animal parasite, which is fortunately not very common, is the "bladder" form of the tape-worm of the dog. This bladder may begin to grow in some organ (generally the liver) of the human body, and cause great suffering, and even death, from its large size. It can only be removed effectually by a surgical operation.

Vegetable Parasites. — These are all very minute, and only visible by the microscope, and their presence on or in the body is only judged from the diseases which they set up. They attack either the external or internal parts of the body. They may be all included under the one head of germs or micro-organisms. These are small, generally microscopic organisms of the lowest forms of vegetable life.

How Germs are Conveyed and Received.—Germs may be carried from one person to another, and received by that person in different ways. They may be conveyed by actual contact, as in the case of ringworm, erysipelas, ophthalmia (infectious inflammation of the eyes), hydrophobia, small-pox, etc. The germs may possibly be taken in through the unbroken skin, but much more frequently through a small crack or sore in the skin. Secondly, they may be conveyed by the air, and taken in by the breath. This is by far the commonest method, as seen in whooping-cough, scarlatina, small-pox, diphtheria, measles, consumption, etc. Thirdly, they may be carried by water, and so taken into the stomach and intestines, as with cholera, typhoid fever, dysentery, etc. Fourthly, by the food, and taken to the stomach and intestines as before, as with typhoid fever, consumption, and foot-and-mouth disease (conveyed by milk). Fifthly, they may be carried by clothes, and so get into the air, as with scarlatina. They may also be carried by insects, such as flies and mosquitoes, as above stated. In some instances the method of conveyance is mysterious, as in the widely-prevalent influenza, whose history has so far baffled research.

Why Children Should not be Purposely Exposed to Infectious Fevers.—It is the custom with some ignorant mothers to purposely expose their children to mild cases of fever, especially measles, chicken-pox, and scarlatina, because they say the children are certain to get them at some time or another, and in this way they think their children will have mild attacks which will protect them in the future. Such a practice is almost criminal, and should be absolutely condemned, and for the following reasons. It is *not* certain that a child will have fever at some time or another; if proper precautions were taken it would not have an infectious disease. A mild attack in one person is not always followed by a mild attack in another, but may give rise to a very serious one. One attack of fever does not necessarily prevent a second attack of the same fever at some future time. The death-rate in children suffering from most fevers (such as measles or scarlatina) is always greater than in adults. Finally, as a rule, the older a child grows the less likely is it to be attacked by a particular fever.

Disinfectants.—This word should only be used to indicate some process or chemical agent which will absolutely kill germs and spores. It is, however, unfortunately applied to other classes, the antiseptics, which will only stop the growth of the germs, but will not kill them; and the deodorants, which merely remove disagreeable smells, and often have no action whatever on the germs themselves. It is obvious that we must use a true disinfectant if we wish to prevent the spread of disease.

Deodorants are such substances as the vapors of turpentine, burning peat, or boiling tar; such liquids as Condy's fluid, or various odorous fluids such as eucalyptus; and such solids as charcoal or camphor. Most of these take away unpleasant smells, but are otherwise useless.

Antiseptics include such bodies as borax, boracic acid, chloride of lime, thymol, Condy's fluid, and various patent disinfectants (so-called). These will arrest the growth of germs, and so prevent putrefaction, but few of them will absolutely kill germs. Condy's fluid will, of course, do so, but only when used in such a strong solution that it would discolor and destroy any clothes put into it.

True disinfectants are of three kinds: fumigation, heat, and chemical.

Fumigation by chlorine and sulphurous acid gas. It is probable that many spores will resist this method, and germs hidden, say in the pocket of a coat, will escape destruction.

Heat.—This is the best method of disinfection as, if the temperature is sufficiently high, all germs and their spores will be destroyed. Unfortunately, it cannot be applied in the case of all infected articles. A ready method of heat-disinfection which can be used in every household is, where possible, to boil any infected article, as it has been shown that by boiling for ten minutes all germs and spores are destroyed.

Chemical Disinfectants. — Although there are many so-called disinfectants offered for sale, yet only a few are true disinfectants if used in a strength which will not destroy the articles to be disinfected. Of these we shall only mention two, namely, carbolic acid and corrosive sublimate. Both of these are dangerous poisons, and must be handled with the utmost care. Carbolic acid needs to be diluted in the proportion of 1 part acid to 20 parts water. Corrosive sublimate is sold in the form of tablets, colored blue to avoid accidents. These must be dissolved in water in the proportion of 1 part to 1,000.

Contagious Diseases.

The following points will help to determine the nature of a suspicious illness:

Disease	Rash or Eruption	Appearance	Duration in Days	Remarks
Chicken-pox . . .	Small rose pimples changing to vesicles	2d day of fever or after 24 hours illness . .	6–7	Scabs from about fourth day of fever.
Erysipelas	Diffuse redness and swelling	2d or 3d day of illness.		
Measles	Small red dots like flea bites	4th day of fever or after 72 hours' illness	6–10	Rash fades on 7th day.
Scarlet Fever . .	Bright scarlet, diffused	2d day of fever or after 24 hours' illness . .	8–10	Rash fades on 5th day.
Small-pox	Small red pimples changing to vesicles, then pustules . . .	3d day of fever or after 48 hours' illness . .	14–21	Scabs form 9th or 10th day, fall off about 14th.
Typhoid Fever . .	Rose-colored spots scattered	11th to 14th day . . .	22–30	Accompanied by diarrhœa.

It will often relieve a mother's anxiety to know how long there is danger of infection after a child has been exposed to a contagious disease. The following table gives the information concerning the more important diseases:

Disease	Symptoms Appear	Period Ranges from	Patient is Infectious
Chicken-pox	On 14th day	10 to 18 days	Until all scabs have fallen off.
Diphtheria	" 2d day	2 to 5 days	14 d's after disappearance of membrane.
Measles*	" 14th day	10 to 14 days	Until scaling and cough have ceased.
Mumps	" 19th day	16 to 24 days	14 days from commencement.
Rotheln	" 14th day	12 to 20 days	10 to 14 days from commencement.
Scarlet Fever	" 4th day	1 to 7 days	Until all scaling has ceased.
Small-pox	" 12th day	1 to 14 days	Until all scabs have fallen off.
Typhoid Fever	" 21st day	1 to 28 days	Until diarrhœa ceases.
Whooping Cough†	" 14th day	7 to 14 days	Six weeks from beginning to whoop.

* In measles the patient is infectious three days before the eruption appears.

† In whooping-cough the patient is infectious during the primary cough, which may be three weeks before the whooping begins.

How to Avoid Disease.

There are various ways in which disease may be avoided. One is not to expose ourselves to contagion or injurious influences. We need to be careful of the food we eat, the water we drink, even the air we breathe, for all of these, as above shown, are prolific sources of the germs of disease, We must also keep away from those afflicted with contagious diseases, or, if obliged to enter their presence, take precautions to avoid infection.

This danger is now taken in hand by the health authorities of cities, patients of this character being removed to special hospitals, or, if kept at home, the yellow placard of warning is conspicuously displayed. Only physicians and nurses—who are supposed to know how to take care of themselves—are permitted to enter the sick-room, or even the house in cases of this kind.

A second and highly important method of avoiding disease, whether infectious or from organic weakness, is to strengthen the system by dint of suitable exercises; seek to breathe only fresh and pure air, adapting the clothing to the climate and the bodily needs, and in other ways endeavoring to harden the body and to enable it to defy the insidious assaults of disease.

Muscular Exercise.

Exercise of all parts of the body is an absolute necessity for the maintenance of perfect health. If a steam-engine is allowed to stand idle it will soon rust and get out of order. Similarly, if the body has no work to do, it will become too fat, and the muscles will waste and get flabby, the heart will become weak, the circulation slow and feeble, the blood will not be properly aerated, poisonous products will accumulate in the body, the complexion will be pale, and the intellect dull, and if the brain is not regularly exercised the person will merely develop into a muscular animal, no better than a savage; he will be stupid, ignorant, and uninteresting both to himself and to others.

The effect of regular muscular exercise is to expand the lungs, to increase the amount of oxygen taken in and the carbon dioxide breathed out; the sweat is increased, and so exercise helps to get rid of waste matters from the body. The heart is strengthened, the blood is more aerated, the muscles grow larger, harder, and more active, the appetite and digestive powers increase, the body is kept warm, and the brain is more active and bright as a result of the general health being so good. During exercise more food is required and much pure air.

The brain worker should take regular gymnastic exercise in a well-ventilated gymnasium, or, better still, regular outdoor exercise, such as walking, climbing, swimming, cricket, or lawn tennis. It is very necessary that such exercise should be regular, as if done irregularly or in "spurts" it will do more harm than good, because the muscles, not being in training, will soon get tired, and the body will suffer. The person whose occupation is an entirely muscular one, such as the common laborer or the blacksmith, should spend his spare time in reading, music, and other mental studies. In other words, every man should have a "hobby" which should exercise faculties as different as possible from the usual occupation. There is but little danger in hard and continuous work, provided it is varied and not monotonous; it is not work but worry which kills. The tendency to worry when there is no need, and which is such a prominent feature with some people, should be constantly kept down.

The above remarks as regards exercise apply, of course, not only to men but to women, and to them almost with greater force, as women neglect it to such an extent. There are plenty of forms of perfectly womanly exercise which may be taken, such as walking, rowing, swimming, skating, and lawn tennis, and if these were indulged in regularly we should hear less of hysteria and weak backs.

The conditions necessary for keeping the muscles in good order are those required for the healthy nutrition of every organ of the body; namely:

Good, rich blood; distribution of blood, and of nerve-force, without obstruction, to each part; exercise of the organs, according

to their ability; sufficient intervals of repose.

Everybody knows that we must have sleep for several hours in each twenty-four, or we wear out. Besides sleep, however, which affects the brain only, there must be rest from action in all the muscles.

The heart must, first of all, be protected from disturbance. It naturally beats faster when any of the large muscles are working actively, as when we run or walk fast; especially up stairs. Our breathing is then hurried also; and thus, commonly, a check is put upon our doing too much: we "get out of breath," and have to stop or slacken our movement.

When the heart is overworked, one of two things happens. If the body is at the time well nourished, and its general vitality is good, the heart *grows stronger*, just as other muscles do, with exercise. In time it grows thicker also; and this is the "hypertrophy" of medical books. But, if the overwork is incessant, the blood is thin and poor, and the sum of energy in the body is low, the heart becomes weak instead; its muscular fibres become pale and thin. In this condition they are easily stretched by the blood within the heart's cavities, and we have what doctors call "dilatation of the heart."

Tight lacing does mischief and impairs health, sometimes causing sudden death, by cramping the motion of the heart, as well as the expansion of the lungs in breathing. It is an enormous mistake; all the more intolerable because the wasp-like shape which it gives to the female figure is unlovely as well as unnatural. No sculptor of classic Greece, no painter of Italy, in the days of Raphael, Michael Angelo, and Titian, ever gave to a goddess or a Madonna such a form as modern fashion has sometimes tortured its victims to obtain. Happily, there is, of late years, some gain in fashion in regard to this matter; the direction both of good taste and of hygiene.

Modes of Exercise.

Walking is excellent; unsurpassed in benefit to the system if one can afford time to get enough of it; a pleasant country, moderate weather, and good company being almost essential to its advantages. Beginners must not walk too fast or too far. Stop at the end of the first hour, and sit down for five minutes. Rest ten minutes at the end of the second, and every successive hour, if you go on long; and never, while unaccustomed to pedestrianism, go more than three miles in one hour.

Riding on horseback is an admirable exercise; but it leaves neglected a number of useful muscles, which are brought into action in walking. Farmers in some places ride on horseback almost always, if they have to go a mile or more; and, in consequence, they become poor walkers. They often almost wear out in an hour's stroll over hard pavements in town. Bicycling much resembles riding in effect.

Rowing is a capital exercise. More muscles are used in it than in walking or riding on horseback; hands, arms, back, legs, and feet are all strenghened by it.

Skating is as wholesome in itself as any exercise can be. Always in a cold, bracing atmosphere (except *roller* skating, of course, which may be anywhere), even in a "rink," with freedom and variety of movement of the body and limbs, yet without violence, it is excellent for both sexes.

Swimming, as an *exercise*, apart from the good obtained from bathing, is less favorable. The pressure of the water, and its temperature if cool or cold, force the blood more or less from the surface of the body to the head. Swimming rapidly is, also, a violent exercise. But every boy and girl should learn to swim as early in life as possible, so as to lessen the danger when "overboard" unexpectedly anywhere.

Out-of door games, as lawn tennis, croquet, cricket, base-ball, are all, in moderation, not only enjoyable, but wholesome in their effect upon the bodily condition. Exhilaration of mind makes all exercise more beneficial. It is astonishing what an amount of work people will do under the name of play. A Chinese mandarin, on seeing a number of English gentlemen engaged actively in a game of base-ball or cricket said, "In my country we always *pay* people for taking so much trouble to amuse us." No

treadmill, however, would ever build up muscle like the cricket ground.

Healthy Breathing.—Little thought is needed, for every one to see that for good breathing there must be sound lungs and air-tubes, and strength in the muscles of the chest, as well as pure air. Our breathing muscles can be strengthened by exercise. *All* active muscular movements of any part of the body, but especially brisk walking or running, quicken the action of the heart; and, as the blood then goes more rapidly through the lungs, it needs to be, and is, aired by quicker breathing.

Using the *voice* a great deal (as in speaking or singing) in early life, promotes the growth of the lungs and the strength of the breathing muscles. Those who belong to consumptive families should, while young, be accustomed to active out-of-door habits; and for them, reading or speaking aloud or singing (vocal gymnastics) will be wholesome exercise; that is, so long as they are well. When the lungs are actually diseased, active efforts of all kinds should be avoided.

Pure air, and *plenty of it*, is a constant necessity for health. The application of this truth belongs in many ways to our every-day life, especially, of course, within doors. Out of doors we can usually trust to nature to supply us a fair share of wholesome air, if, of course, we keep away from localities in which the air is vitiated by bad sanitation or other unwholesome surroundings.

Personal Cleanliness.—The importance of cleanliness in all the actions of life is almost too apparent to need mention, were it not that it is so much neglected by many. Not only cleanliness of the skin, the hair, the teeth, the nails, and the clothing is necessary, but also cleanliness in all our habits. By this means we shall avoid many diseases which are entirely due to dirt of various kinds. The old and excellent definition that dirt is matter in the wrong place suggests that it should be removed; and when we remember that this dirt may consist of irritating particles of minerals in the form of dust, or of poisonous chemicals, and, more fatally, of disease germs, we shall be greatly impressed with the necessity of being clean.

Clothing.

Clothing, to promote health, should be: sufficient for comfortable warmth; not excessive in quantity or pressure; properly distributed over the body; suited to permit transpiration and moisture; changed often enough for cleanliness.

Some persons, with the idea of *hardening* themselves, wear as little clothing in winter as possible. This is perhaps well enough if they are very robust; but if not strong, they become chilled through and may be severely reduced in health.

Yet it is equally a mistake to keep one's self too warm, burdening the body with unnecessary clothing. The same is true of bed-covering, in respect to which people have very different needs. On the same night one may be satisfied with a single blanket, while another needs two or three. Every one ought to be warm enough to sleep comfortably.

Kind of Clothing.—We should adapt the amount and quality of our clothing to the weather. Not by the almanac, however, as the seasons do not follow it exactly. Chinese people, it is said, having cool nights and very hot noons, begin the day with several light garments on. As the hours of morning bring warmth, off goes one thing after another, till by noon-day they have only one or two covers left. With the cooling of the afternoon they again begin to put them on; and so, hour by hour, they get back to the morning's raiment. This is reasonable enough. Many persons among us make the mistake of wearing too little clothing (as well as keeping their houses too cool) in the changeable and uncertain weather of spring and autumn; and a large number of "colds" are caught in that way.

Of the materials in use for clothing, the warmest (besides furs) is wool. An open, porous fabric, containing air, conducts heat more slowly than a smooth, dense one; because air itself is a slow heat-conductor. So a tight-fitting kid glove scarcely keeps the hand warm, while a loose mitten is very comfortable in cold weather.

Silk is a slow conductor also, and it is warm for garments in proportion to its thickness. It conducts *electricity* very slowly,

which makes it particularly suitable for undergarments with those who are liable to pains and aches on damp days, or when the wind is "easterly."

Next to wool and silk comes cotton (muslin); and the coolest of all are linen garments. These are most fit for midsummer wear, when our American climate is, by fits and starts at least, tropical. Every one should be prepared, however, at all seasons with *extras* to put on in case of change of weather from warm to cool.

In our variable climate, delicate persons, especially those liable to rheumatism or neuralgia, generally find advantage in wearing either *light* flannel or silk next to the body even through the summer, with a heavier kind, of course, for winter.

In the distribution of clothing over the body, the main part to keep warm is the chest. As it contains the heart and lungs, all the blood in the body passes through it constantly, and conveys its temperature everywhere. Moreover, chilling the heart or lungs endangers injury to those central organs themselves.

Next, the abdomen must be sufficiently protected. Great organs, the stomach, bowels, liver, spleen, kidneys, etc,, are contained in it, and are all (most of all the bowels) liable to attacks of disorder from cold. Sudden changes of temperature often bring on diarrhœa; sometimes, cholera-morbus or dysentery.

Then, the extremities. Of these, the feet must be best cared for. They are farthest from the heart, and nearest to the ground. Hence, at the same general temperature, they suffer most from cold. Children, in mild climates, may grow up accustomed to running about barefoot, if they have freedom and space to acquire active habits.

Night Attire.—At bedtime all the clothes should be changed, the day clothes being hung up to be dried and ventilated. The night clothes should be made of cotton, which is not irritating to the skin as woolen is. Sufficient warmth will be given by the bedclothes, which should consist in part of blankets or feathers, and should be light and warm. A woollen night-dress, besides being irritating, promotes too much perspiration, and makes the body hot; but for young children, old people, rheumatic subjects, or in very cold climates, a woolen night-dress is necessary.

How to Live Long.

As a brief summary statement of the most essential conditions of health and longevity, we may conclude our study of Hygiene with the following precepts:

1. Never breathe three breaths of foul air when you can get out from it into that which is fresh, or can get fresh air into the place where you are.

2. Eat when you are hungry, and only wholesome food. Eat slowly, and stop as soon as hunger is satisfied.

3. Drink pure water when you are thirsty; take milk as part of your daily food; a cup of tea, not too strong, if you like it, or cocoa; but coffee only when you are very tired; and alcoholic beverages, while in good health and strength, never. Also, make no use of tobacco.

4. Dress always with a view to comfort and convenience; not compressing the chest, nor impeding the movement of any of the limbs.

5. Be careful to maintain a regular habit of daily movement of the bowels.

6. Rest, if you can, when tired, and sleep when sleepy. Take eight hours of sleep every night; more, if you feel the need of it, and can get it.

7. Work regularly at something every day, and do the best you can throughout; but avoid over-work. The sign of it is, that you wake up tired, not refreshed, in the morning.

8. Never do any regular week-day labor (simple unavoidable small chores excepted) on the first day of the week. Make it a day of repose and renovation for mind and body.

9. However rich you may be, do not make pleasure the aim and object of life; it will wear you out faster than work, or even worry.

Lastly, let every day be cheered by sunshine from above, and brightened by the hope of a better life to come.

VALUE OF VEGETABLE AND ANIMAL FOOD

No subject is of more vital importance to the care of health than that of food. Hence a knowledge of the value of various food products is indispensable to housekeepers and to those who value their own health.

Are *vegetarians* right, who insist that we should eat no meat at all? Their argument is, that vegetables contain all the elements required for our nourishment, made up into organic stuff, ready to be digested and built up into our tissues and used as fuel. Hence, they say, it is useless, cruel, and expensive to slay our subject animals to gratify our carnivorous taste.

True, plants, roots, seeds, and fruits do contain everything absolutely necessary for food. Men often live for years, many perhaps (after infancy) for lifetimes, without animal food. But that is not the whole question. Is a solely vegetable diet the *best* for *health* with *all people?*

On this we must inquire further; are the elements in exactly the *same state of combination* in vegetables as in meat? Our answer is, no. They are more *concentrated* in animal flesh, are worked up already into animal substances, and therefore are more *readily assimilated* than vegetable food.

Can we judge by anything in our *structure* which we are best fitted for? Flesh-eating beasts, as lions, cats, dogs, have *only* sharp, cutting, and tearing teeth. Grass-eaters have nippers in front, and all the back teeth broad-crowned, nearly flat. We resemble the bear, hog, and rat, in having teeth for cutting in front, tearing at the sides, and broad, grinders back in our jaws.

The length of the human alimentary canal (that is, stomach and intestines) is about six times that of our bodies; intermediate between that of the purely *carnivorous* and of the entirely *herbivorous* animals. It would seem then that, like the bear, hog, and rat, we are made fit for *either* animal or vegetable food. We are *omnivorous*.

On the whole, this is the conclusion to which physicians and sanitarians have generally come—that, with healthy people, living in the open country, not working very hard, and having an abundance of good vegetable food, meat is not necessary. They can live long lives without it. But, in close-built cities, where the air is not pure, where work is hard, and "vexation of spirit" abounds, a *mixed diet is best.*

Bread.

Time out of mind "the staff of life," was made of *brayed* grain by our ancient forefathers before they left Western Asia. Bread contains nitrogenous and non-nitrogenous food principles; gluten and starch, as well as salts. It is adapted both for tissue-building and for energy-producing use in the body.

Wheat bread is as strong in nitrogen as any, and is richer than other kinds in phosphates, which are supposed to be in part nerve-feeders. The *whitest* of flour does not make the most nourishing bread. The richest part of the grain is just beneath the chaff, making slightly yellowish flour. Improved ways of grinding wheat now retain nearly all of this strength of the flour, some of which was formerly wasted.

Rye meal makes, by itself, a nourishing but less spongy bread than wheat. It is very largely eaten by people in Northern Europe. The best way to use it in making bread is to mix it with an equal or less quantity of wheat flour.

Bread must be properly *raised* to be good. This is done by a *fermentation*, which takes place in the starch (it first becoming changed to sugar) of the dough, under the action of yeast. Sugar, when it ferments, is converted into *alcohol* and *carbonic-acid gas*. The alcohol is very small in amount. The carbonic acid gas is kept in by the sticky, pasty *gluten*, of which good flour has about twelve per cent. Thus the dough is stretched or expanded into a spongy mass. *Baking* dries it somewhat, and makes it more or less crisp, or at least takes away the adhesiveness of the dough.

Faults of bread, which make it less wholesome, as well as less agreeable, are *heaviness*, *sourness*, *bitterness*, *mouldiness*, and an excess of *saline* material. Heavy, ill-raised, and under-baked bread is very

unwholesome. Sour bread is so also. It is made by *over*-raising, or by using spoiled flour. Bitterness comes either from bad yeast or too much of the yeast being used; mouldiness, from the flour or bread being kept too long.

Other ways of raising bread are: using *salæratus*, bicarbonate of potassium, from which the carbonic acid is set free by warmth, or by adding sour milk, containing lactic acid; or putting in the dough sour milk and bicarbonate of sodium; or carbonate of ammonium (smelling salt); or phosphoric acid and bicarbonate of sodium (Horsford's process). Still another plan is to make the carbonic acid as it is made for "mineral water," and then by pressure to force it into the dough. This constitutes "unfermented aerated bread." When carefully made, it is very good, keeps well, and can safely take the place of ordinary bread.

Hot fresh bread has a somewhat more adhesive or pasty quality than stale bread. The gastric juice, therefore, does not so readily penetrate and digest it. Persons with entirely sound digestion have no trouble in disposing of it; but dyspeptics should always prefer stale bread.

Adulterations of flour are most often alum, chalk, lime, and potato meal. A little alum is frequently put in by bakers to whiten the bread, as well as to make it weigh more when sold by the pound. Much alum makes it unwholesome, irritating the stomach and binding the bowels. Potato meal is harmless, but a fraud when mixed with wheat flour, as it costs much less, and is not so nourishing. The microscope will detect it.

Bran bread (as before remarked) is rougher than that of white flour, and so, by stimulating the muscular coat of the bowels, it helps to keep them open. Rye bread is about as nourishing as wheat. Oatmeal does not rise so well as wheat flour, but in cakes, porridge, gruel, and grits, it makes an admirable food.

Buckwheat is nourishing, but proves to be rather better suited, in buckwheat cakes, for an occasional luxury than for a stand-by diet. Barley is not a strong meal, though "John Barleycorn" makes a very strong drink when fermented and distilled. Barley water is often a good addition to milk when it disagrees with young infants.

Rice contains but a moderate amount of nitrogen, but plenty of starch, and (like other grains) some salts; and it is very easily digested. Chinamen and Hindus, many millions of them, live chiefly on it. It is soothing to the bowels, and particularly suitable in cases of diarrhœa.

Corn (maize), so much used in this country and in Southern Europe, is fairly nitrogenous, and is comparatively rich in fat. It affords good and serviceable food, whether eaten from the ear (sugar corn, boiling ears) or made into bread, mush or gruel. It is not, however, quite so easily digested as wheat, oatmeal, or rice.

Vegetables.

Peas and Beans are highly nitrogenous, besides containing a great deal of starch. But that their share of salts, especially phosphates, is less, and that they are more uncertain of digestion, they would rank along with wheat bread in value.

What we call the **Irish potato** is really of American origin. Abounding in starch, potatoes contain but little nitrogen. Their great merit is, that they produce largely for their cost; they can be made palatable by cooking, and go a great ways in bulk as food.

The Sweet Potato is an Old World plant, known long before the discovery of America. It is harder to keep than the round or white potato, easily undergoing a sort of sugary decay. At the best, it is not quite so easily digested as the round potato. The *yam* of the East and West Indies, is a root somewhat analagous to the sweet potato, and another similar root is a good deal eaten in the Sandwich Islands.

The Tomato is really a *fruit*. It is more nearly always wholesome for everybody than any other of what we call vegetables. Turnips, carrots, parsnips, the onion, cabbage, squash, and salsify, all rank below potatoes and tomatoes in digestibility.

Cauliflowers and **Cabbages**, are plants of the same species, differently developed. But the cauliflower is, under cultivation, much the most tender and digestible.

Beets, when young, are very easily digested; quite otherwise after they grow old and tough. Asparagus, of the best quality, is entirely wholesome. Spinach, in good condition, is not at all indigestible.

Mushrooms are strong and meat-like food, wholesome for most, but not for all people. The point of importance is, to be sure *they are* mushrooms. A number of other *fungi* are safe and nourishing, but some are very poisonous. Never gather or eat what are called mushrooms unless they have, underneath, pink gills, so called, and above, as well as on the stem, a skin which can be easily peeled off; also, they have no unpleasant taste or smell, and grow not in dark woods, but in rather open fields.

Celery, when white and tender, is, in moderation, very wholesome, either raw or stewed. It represents, when eaten raw, a class of food articles (the radish and lettuce are others) of more importance than is generally appreciated. We need, every few days, to take something in its natural state, which has "never seen the fire."

Fruits.

As a rule, *fresh fruits are wholesome.* They promote the natural action of the bowels, and are refreshing and antiscorbutic. When the bowels are disordered, as in diarrhœa or dysentery (except when these result from *scurvy*), they are not suitable.

All fruits are not equally digestible or desirable for persons of uncertain health. *Peaches*, *apples*, and *oranges* come the nearest to being good for everybody while in health; and oranges, as well as the finer and more delicate kinds of *grapes*, are often with advantage allowed to the sick. Many grapes have a tough pulp, which ought not to be swallowed; and the seeds never should be. They, and apple cores, and even cherry-stones, are often taken into the stomach, with no harm following. But they are not digestible, and now and then they collect together and cause obstruction. There is a queer little offset to the large intestine into which, in a few instances, an apple-seed or some such thing has found its way, producing an inflammation ending in death.

The *least* wholesome of our domestic kinds may be said to be the *cherry*, and, doubtful for all dyspeptics, also, *pears;* of foreign fruits, *figs* and *pineapples*. *Prunes* (partly dried plums), *figs*, and *dates* are especially laxative to the bowels.

Stewed fruits are far less uniformly digestible than the same eaten fresh, in season. *Preserves* ought to be ruled out of the diet of dyspeptics, and taken, as a rare indulgence, in small quantities only, by all. *Lemonade*, made with the juice of lemons (not citric acid of the drug-shop), is not only refreshing but beneficial to most persons in hot weather, and when sick with fever. But, in the last case, irritability of the stomach or bowels may sometimes prevent its use.

Canned fruits, put up with skill and care, may approach very nearly to fresh fruits in wholesomeness; but the skill and care actually used are often far from perfect. Moreover, of the different materials employed for keeping fruit or other food for a long time, the safest and best, undoubtedly, is *glass*.

Eggs.

There is excellent nourishment, mostly albuminoid, but with a small amount of fat (in the yolk) in eggs. There is, of course, no truth in the popular saying, that "an egg is as good as a pound of meat." *In proportion* to its *weight*, an egg is equally nourishing with meat; that is all. It is of great consequence that eggs shall be *fresh* when eaten.

Meats.

All parts of the Animal Kingdom furnish food for men in some quarters of the earth. *Vertebrates* are represented abundantly; in *mammals* (as the ox and sheep), *birds*, *reptiles*, (*e. g.* the terrapin), and *fishes*. *Molluscs*, as oysters and clams, are favorites with many. *Articulates* are familiar in the lobster, crab, prawn, and shrimp.

Beef is the strongest kind of meat, the most concentrated albuminoid food. It is, also, when tender, as digestible as any other article of diet. Many dyspeptics eat only beef and bread every day. A larger range, however, would nearly always be better for them. Signs of good quality in beef are these: it should be of a fresh red color,

neither pale-pink nor dark-purple; marble-veined lightly with fat; not wet, but firm to the touch; with little odor, none unpleasant; should shrink but little in cooking. If tested with litmus paper, its juice will show acidity by reddening it.

Veal is not nearly so easily digested as beef. Some persons, not usually dyspeptic, have to avoid it altogether. A bad fraud in some city markets is the sale of *too young* veal ("bob" veal). It ought never to be eaten before it is four or five weeks old.

Mutton is very nearly (some analysts say quite) as strong a nitrogenous food as beef, and scarcely less digestible with some persons. Either kind of meat may be tough or tender, and so may give the stomach, as well as the teeth, more labor in disposing of it. Tough meat *does not pay;* don't buy it. Internal work in digestion has to be economized or supported like external work, or the strength goes down.

Lamb is more desirable every way than old mutton. It seldom, or never, comes to our markets too young.

Pork should always be avoided by dyspeptics and by persons of uncertain peptic powers. *All* rules about diet are intened for these. Healthy people can digest almost anything, except bob veal and very ancient knife-resisting mutton, or leathery skirt of beef; anything, in short, that their teeth will chew. Fresh pork, for the hearty, active man or woman, or roast pig, is good and nourishing; but it must always be *well done*. All hog-meat must be cooked *through* (not only on the surface) to destroy any possible *parasites* which it may contain. Of these, *trichinæ* are the worst, being dangerous to life; but they are certain to be killed, and thus made harmless, by thoroughly cooking the meat. Smoking it without cooking will not make it safe. Freezing it may do so.

Birds have weaker, less nitrogenous meat than mammals, but generally more tender and delicate. Most digestible of domestic birds are the turkey, chicken, and guinea-fowl; less so the duck (though often very good), and least fit for doubtful stomachs, the goose. Pigeons are moderately digestible, but one soon tires of them. Our wild partridges, prairie chickens, and grouse (some of which are called pheasants, but there are no true pheasants native to this country), and quails, are very good game-birds for the table. So are reed-birds (favorites for invalids and convalescents), woodcock, snipe, and canvas-back ducks. The turkey is perhaps our most valuable original contribution to the diet of mankind, unless we except the potato and maize.

Fish, of some kinds, are consumed in almost all parts of the world. Thousands of people depend upon fishing for a living. There is still less nitrogenous material in fish than in birds' meat; some, as the salmon, have a good deal of fat. A larger proportion of the phosphates (salts containing phosphorus) is present in their substance than in land animals. Some persons imagine that fish are therefore especially a brain-making diet. But there is enough of the phosphate in ordinary meat and bread for any one's brains, if he can appropriate and assimilate them well. Fresh fish, nicely cooked, are wholesome and nourishing.

Of articulates, lobsters, crabs, prawns, and shrimps have been already mentioned. Lobsters, at least, when *fresh*, are not unwholesome for most people. Remember, everything taken out of the water spoils soon after it dies. The place to enjoy lobsters, crabs, and shrimps safely is at the seashore.

Molluscs, as *oysters* and *clams*, are nowhere more appreciated than in America. Our oysters are probably the *best* in the world; although in tropical waters they grow a great deal larger. Clams are tougher, and much less digestible; their soup can be enjoyed, however, without risking the hard clam itself.

Convalescents can begin with good sound oysters before they dare venture upon more solid food. One of their virtues is that they can be cooked in so many ways. Raw, they are digestible by the hungry man almost always. Roasted in the shell, they are manageable by every stomach that has any gastric juice in it; no solid is more digestible. Panned, steamed, stewed, broiled they are digestible and wholesome. *Fried* oysters must be, with the dyspeptic, quite forbidden.

Time Table for the Housekeeper.

	Mode of Preparation	Time of Cooking	Time of Digestion
		H. M.	H. M.
Apples, sour, hard	Raw	. . .	2 50
Apples, sweet and mellow	Raw	. . .	1 50
Asparagus	Boiled	15 to 30	2 30
Beans (pod)	Boiled	1 00	2 30
Beans with green Corn	Boiled	45	3 45
Beef	Roasted	* 25	3 00
Beefsteak	Broiled	15	3 00
Beefsteak	Fried	15	4 00
Beets, young	Boiled	2 00	3 45
Beets, old	Boiled	4 30	4 00
Bread, Corn	Baked	45	3 15
Bread, Wheat	Baked	1 00	3 30
Butter	Melted	. . .	3 30
Cabbage	Boiled	1 00	4 30
Cauliflower	Boiled	1-2 00	2 30
Cake, Sponge	Baked	45	2 30
Carrot, Orange	Boiled	1 00	3 15
Cheese, old	Raw	. . .	3 30
Chicken	Fricasseed	1 00	3 45
Codfish, dry and whole	Boiled	* 15	2 00
Custard (one quart)	Baked	30	2 45
Duck, tame	Roasted	1 30	4 00
Duck, wild	Roasted	1 00	4 50
Dumpling, Apple	Boiled	1 00	3 00
Eggs, hard	Boiled	10	3 30
Eggs, soft	Boiled	3	3 00
Eggs	Fried	5	3 30
Fowls, domestic, roasted or	Boiled	1 00	4 00
Lamb	Boiled	* 20	2 30
Meat and vegetables	Hashed	30	2 30
Milk	Boiled	. . .	2 00
Mutton	Roast	* 25	3 15
Mutton	Broiled	20	3 00
Onions	Boiled	1-2 00	3 00
Oysters	Stewed	5	3 30
Parsnips	Boiled	1 00	3 00
Pigs' Feet	Soused	. . .	1 00
Pork	Roast	* 30	5 15
Pork	Boiled	* 25	4 30
Pork, raw or	Fried	. . .	4 15
Pork	Broiled	20	3 15
Potatoes	Boiled	30	3 30
Potatoes	Baked	45	3 30
Potatoes	Roasted	45	2 30
Rice	Boiled	20	1 00
Sausage	Fried	25	4 00
Soup, Vegetable	Boiled	1 00	4 00
Soup, Chicken	Boiled	2 00	3 00
Soup, Oyster or mutton	Boiled	† 3 30	3 30
Spinach	Boiled	1-2 00	2 30
Tapioca	Boiled	1 30	2 00
Tomatoes	Fresh	1 00	2 30
Tomatoes	Canned	30	2 30
Trout, Salmon, fresh, boiled or	Fried	30	1 30
Turkey, boiled or	Roasted	* 20	2 30
Turnips	Boiled	45	3 30
Veal	Broiled	20	4 00

* Minutes to the pound. † Mutton Soup.

The time given is the general average; the time will vary slightly with the quality of the article.

THE HOMEOPATHIC TREATMENT

The homeopathic treatment given in this book is by a homeopathic physician of over forty years' active experience. He is a member of the American Institute of Homeopathy and its Society of Seniors. A member and Ex-President of a State Medical and several other medical societies; Ex-Vice-President of a State Surgical and Gynecological Society; Honorary member of two State Societies; an author and writer for medical journals for over thirty-five years, and his writings are eagerly read everywhere. He says: "Your readers should understand that, if they wish for reliable remedies, they must purchase them of some reliable homeopathic pharmacist or reliable physician; for homeopathic remedies kept in drug stores are liable to be more or less injurious by the odors that pervade the store, and their sales are so infrequent the remedies are liable to be wholly or partly useless by long standing."

In the following diseases, it is best to give the third decimal attenuation, unless specified in that particular disease, and they can be bought in liquid or globule form or a few in a powdered form. No. 35 globules is a convenient form to use; two, three or four globules, at a dose; a dose once in from ten or fifteen minutes, to once or twice a day.

If liquids are given, two or three drops in one-half glass of water, a teaspoonful at a dose, repeated or given same as globules.

Remember, it is not the amount of medicine given that cures, but the right kind.

Much has been said and written about the homeopathic dose, but a dose just large enough to cure may be considered a homeopathic dose.

Abortions.—To avoid them there should be no active mental excitement. The use or smell of turpentine, even in paint, is very dangerous. If threatened from fright, Aconite is the remedy. Belladonna if there is headache, red face and hemorrhage of bright blood; Cinnamon for hemorrhage. If abortion is feared with weak bearing down sensation, Helonias, second decimal, a dose night and morning or several times a day. If from injury, Arnica is the remedy.

Abscess.—If for any threatened abscess and pain, Belladonna; then give Hypophosphite of lime first decimal trituration. If suppuration is feared give Hepar sul.; as high as the thirteenth attenuation is better than lower to hasten suppuration. At first, bathe with tincture of Myrrh and add it to poultices if used.

Acne — Flesh-Worms — Blackheads — Comedones.—This is a skin-disease, occurring about the face and chest of young people, and very disfiguring in appearance; it is situated in the oil-glands of the skin, the function of which is to lubricate the hair; the gland becomes filled by the secretion, which dries, and by its irritating presence sets up more or less inflammation in the little gland and its duct; as the production of the oily material progresses, the accumulation causes the orifice of the duct to rise slightly above the level of the skin, and dust adhering to the projecting cheesy material, gives to the disease the characteristic appearance whence it derives its name. The disease, though harmless in its nature, may last a long time, as fresh spots often appear as the old ones are healing.

TREATMENT consists of careful regulation of the general health, pressing out the little masses as they accumulate, and thorough cleanliness. Tarsoap and plenty of friction of the skin should be used.

REMEDIES.—Give Bromide of Arsenic, sixth decimal, four times a day at first, then twice or once a day is almost a specific.

After-Pains.—They are rarely troublesome after a first confinement, but are apt to increase in severity at each succeeding one. After-pains are, in moderation, salutary, and are caused by the efforts of the womb to attain that properly contracted condition on which the woman's safety depends. If they are very severe, it is generally owing to the presence of clotted blood, which must be expelled before they moderate. A constant, unintermitting after-pain coming on very

soon after the termination of labor, is often symptomatic of internal flooding, and should be attended to accordingly.

TREATMENT—Omit bandage to prevent, and give Arnica after serious labor. Pulsatilla, pains in back and abdomen. Caulophyllum for labor-like pains. Cimicifuga if the pains are in the back and extend down the limbs.

Ague.—To stop chills, give a cup of hot coffee, no sugar, no milk, and the juice of a lemon added. Drink when the chill is beginning. It is better than the highly lauded quinine, and has no injurious effects like quinine. The remedy to take the place of quinine is Picrate of Ammonia, sixth decimal, every two hours, or once or twice a day according to the severity of the case. The only way to perfectly cure it is to give the truly indicated remedy considerably attenuated and not too often repeated. Apis mel, chill begins in front of chest and abdomen at three or four P. M. Thirsty during chill, can't bear a warm room during chill; joints and muscles sore.

Arnica.—Morning or evening, much yawning and stretching before chill. Does not shake, shivers only.

Arsenicum.—All times, mostly at one or two P. M. Alternation of heat and chill; better from warmth. During fever very restless, great heat, unquenchable thirst, drinks but little at a time and often. During sweat, drinks large quantities.

Camphor.—During chill, icy coldness all over, but will not remain covered.

Capsicum.—Chill begins in back.

China.—Chill on certain days, regular once in two or three or six days. Violent chill, no thirst. Liver and spleen swollen and painful.

Eupatorium Perf.—Begins in back seven to nine A. M. Thirst for water, but it causes vomiting. Bitter vomiting at close of chill.

Ignatia.—Any time, most often in evening. Thirst for large quantities of water during chill, no thirst during fever.

Ipecacuanha.—Any hour, generally eleven A.M. During chill worse from warmth. Chill lessened by drinking.

Natrum Muriaticum.—Chill every day at ten to eleven A.M. Dreads the chill. Before chill, thirst for large quantities of water. Violent chill begins in hands and feet. Lips and nails blue. Fever long and severe, with thirst and headache. Profuse perspiration. Fever blisters around the mouth.

Nux Vomica.—To be given if drugs have been taken. Chill generally in evening or early morning, severe and long. Thirsty, worse from drinking. Must be covered up, but the warmth does not relieve.

Alcoholism and Its Treatment.—The results of the abuse of alcohol upon the system are caused both by its immediate local action upon the stomach, and its remote effects upon the various organs of the body after its absorption into the circulation. In the former case, it acts in the same manner as any other irritant, causing inflammation of the mucous membrane of the digestive organs, and leading to inflammation of the mouth, throat, stomach, etc., each of which should receive consideration in proper treatment; but its action upon the nervous and circulatory systems, results in well-defined disturbances, dangerous not only to the life of the affected individual, but perilous to all who may come in contact with him. Various conditions, which may be classified as *acute* and *chronic*, may occur, the result of this unfortunate habit. Of the former, the ordinary manifestations of intoxication are but too well known; the higher intellectual faculties are in abeyance, and the more profound the intoxication, either from the amount ingested or the greater susceptibility of the patient, the more the brutal and animal characteristics become unmasked. Happily, the poison is volatile, and the resulting nausea, vomiting, and stuporous sleep give nature an opportunity of eliminating it from the system, and the patient awakens sober, but with headache, foul stomach, and a nervous system more or less shattered by the indulgence.

TREATMENT.—For the morning vomiting, Arsenicum. The general condition is best treated by Nux Vomica; and in the acute attacks Hyoscyamus or Belladonna should be given.

The potent remedy for this disease is Cannabis Indica, tincture; drop doses once in two or fourh ours. Nux vomica for stomach symptoms following.

Alopecia—Falling of the Hair—Baldness.—Falling of the hair occurs normally in advanced age, and is then accompanied by wasting of the hair-follicles, and is not benefited by treatment. At an earlier period of life it takes place as the sequel of many acute diseases, notably fevers; in the latter case the follicles, as a rule, are not destroyed, the hair reappearing at first very fine in texture, but in time becoming coarser.

TREATMENT.—Bathe head occasionally, with very dilute crude Petroleum. Sulphur should be given at first, then Hepar sul. or Rhus tox.

Anæmia—Lack of Blood.—This term is applied to a condition in which there is deficiency of the red-blood globules, and consequently a thin and pale state of the blood. It results from any prolonged drain upon the system, such as diarrhea, profuse discharges of fluids, either from hemorrhages or discharges from abscesses; from acute disease in which the vital powers have been violently assailed, or from chronic wasting diseases, such as consumption, Bright's disease, etc.

TREATMENT.—As this disease is the result of some local disease, it is necessary to remove that disease. Many times it is something that can be removed by Calcarea carb. or Pulsatilla. As iron is so liable to produce such unpleasant results following its use, as disease of the bones or stomach, but more especially a strong tendency to diseases of the lungs, a cough very hard to cure but more liable to end in consumption, its use should be substituted by a vegetable iron, Sanguis draconis. This is best given dissolved (the gum) in Port or California wine, shaken till dissolved, and a tablespoonful, three or four times a day.

Dissolve one ounce of gum in one pint of wine. The wine can be renewed once or twice.

Angina Pectoris, or Spasm of the Heart, is one of the most formidable and painful of the affections which terminate human life. It occurs more generally after middle age, and is more frequent in men than women.

Symptoms.—The attack is characterized by the sudden onset of agonizing pain, referred to the center of the chest, or a little to the left side of it, passing through to the spine, up to the left shoulder, and down the arm of the same side even to the extremities of the fingers. Sometimes both arms are affected. Along with the pain, which is always said to be agony beyond description, there is a sensation as of instant impending death. The paroxysm ceases as suddenly as it comes on. Angina pectoris may be preceded by warning symptoms, palpitation, shortness of breathing, indigestion, or it may come on unheralded by any of these, generally during some slight exertion, as walking up hill, or during strong mental emotion, but not unfrequently in the night, after the first sleep.

TREATMENT.—An attack of angina pectoris is an emergency affecting life, to which there are few equal; full, instant stimulation is demanded, and the first agent of the kind at hand must be used, till other remedies and proper assistance can be procured. A glass of spirits and water, as hot and strong as it can be swallowed, must at once be given. A strong mustard-poultice is at once to be applied to the front of the chest, the same being placed between the shoulders, and hot applications made to the feet. If the paroxysm be not subdued in a quarter of an hour, the stimulant is to be repeated; and this again after the same interval, if requisite. Spirits have been mentioned, as being the most readily procurable; but when ether and sal-volatile, either one or other, or both, are at hand, they are preferable, and must be given in just so much water as will permit of their being swallowed—a teaspoonful of each. It is needless, perhaps, to say that all these measures of an emergency in which not a moment is to be lost are while waiting the arrival of the medical attendant, and that to him must be intrusted the direction of that regulated mode of life which must ever be adopted after an attack of this disease.

REMEDIES. — Belladonna for sharp pains, red face. Gelsemium, sharp pains, difficult swallowing or talking, dark red face, mahogany color. Glonoine, rapid pulse, severe pains, better lying down.

Veratrum viride, quick pulse, nausea. Amyl nitrite, one part, alcohol, three parts, given by inhalation during attack, will give relief and no headache. A new remedy, Phaseolus nana, introduced recently by Dr. A. M. Cushing, Springfield, Mass., is giving wonderful results in various diseases of the heart; it is hoped it will prove beneficial in this dangerous disease.

Aphonia—Loss of Voice—Hoarseness.—Loss of voice may be owing to inflammatory swelling, either acute or chronic, or to ulceration of the lining membrane of the larynx to paralysis, or to hysterical affection. Coming on suddenly, accompanied with fever, pain in the larynx and upper part of the throat, increased on swallowing, with difficulty of breathing, the above symptom must be regarded with some apprehension, as one of the concomitants of a rapidly fatal disease, *acute laryngitis*. Loss of voice, however, frequently occurs quite unconnected with the other symptoms mentioned, and is then not to be so seriously regarded. Many persons are liable to it after exposure to night or foggy air, or after much or loud talking. Persons living in damp houses suffer from this form of aphonia, which is probably owing to the thickening or great susceptibility of the laryngeal membrane.

REMEDIES.—Belladonna for sore inflamed throat. Kali bichromicum, with much hoarseness and accumulation of stringy mucus in throat. Sanguinaria, for a catarrhal condition. Phosphorus without much soreness.

Aphthæ, or Thrush.—Thrush is more especially a disease of early infancy, affecting the mouth and throat, the lining membrane of which, in this disease, appears as if sprinkled over with bits of milk-curd. Recent researches have discovered that upon these patches a filiform description of minute fungus is developed, which probably finds a congenial habitat in the disordered secretions which are the main feature of the disease: excess of acid, and irritation of the mucous lining of the bowls, always existing. The disease is not generally serious; it is accompanied by slight fever and drowsiness, and passes off in eight or ten days; during this time, however, it interferes with the child taking the breast properly. Aphthæ is very often the result of improper feeding with bread and other things unfit for the infant stomach.

REMEDIES.—Prevented by keeping the child clean and not too warmly dressed. Arsenicum, a livid bluish appearance of the mouth, with weakeness and diarrhea. Borax, if the mouth is very sore. Bromide of Potash triturated with equal parts of sugar; a small powder every two hours, especially if the mouth is dry. Bryonia, if the child will not nurse, till the mouth is moistened. Carbo. veg., mouth hot, discharges sour. Chamomilla, if child is nervous and has to be carried. Mercurius, mouth white, much saliva, offensive smell.

Asthma is an affection of the chest, characterized by distressing inability of the person suffering from it to inspire sufficient air to fill the lungs. The term, although applied by medical men to a defined disease, is used popularly to denote any difficulty of breathing, from whatever cause occurring, whether from disease of the heart, or any of the varied affections of the lungs. Asthma, although a nervous or spasmodic affection, is very frequently connected with actual changes in the lungs themselves. Asthmatic fits come on at irregular intervals; for several days, or rather nights, successively, the patient is attacked, and a considerable time may then elapse before he again suffers; not that a regular asthmatic is in the interval entirely free from uneasiness, for there is generally some slight oppression of the breathing, liable to be aggravated by slight causes. Changes in the weather, peculiarity of situation, errors in diet, anxiety, fatigue, mental excitement, may any of them induce a paroxysm of asthma in the predisposed.

REMEDIES.—Arsenicum, worse at night, patient has to sit up in bed, almost constant cough, cold perspiration. Carbo. veg., stomach full of wind; belching of wind gives brief relief. Ipecac, constant loose cough, causes gagging but no raising of phlegm. Lachesis, worse after sleep, after eating, or moving the arms, or touching the throat outside. Nux vomica for persons who drink much tea or coffee or liquors, or have taken large doses of drugs; irritable, much wind in stomach, costive. Opium, long, slow snoring, breathing. Better in cold air; worse after eating, drinking wine or smoking.

Bandaging.—Many times a plaster of adhesive or sticking plaster, rightly put on, is best; for it will keep in position, and stay a long time.

Bilious Diseases.—For vomiting of bitter bile, Nux Vomica, a dose once in fifteen or thirty minutes till relieved, and especially if it is caused by unripe fruit. Pulsatilla, if it is caused by greasy food. Veratrum alb., if severe vomiting, purging, cold clammy skin, cramps in bowels; dose every five or ten minutes, till better. Camphor, cold and collapsed with the vomiting. Cuprum, great cramping in bowels and limbs.

Diseases of the Bladder.—Many of the diseases and disorders of the bladder are brought on by carelessness, neglect, or too great subservience to the conventional restraints of society; those persons, especially, who habitually or necessarily are frequently compelled to restrain the desire, and forego for a time the relief of emptying a distended bladder, are liable to affections of the organ. In early childhood, but sometimes even beyond puberty, the bladder habitually empties itself during sleep; night after night this occurs, and proves a serious annoyance and expense too, from the consequent destruction of bedding. The habit or disorder is sometimes extremely difficult, if not quite impossible, to eradicate. The regular use of the cold hip-bath every morning is one of the most efficient remedies.

REMEDIES.—Aconite, inflammation and strangury from colds. Cantharis, painful even bloody urine, or suppression, especially during fevers. For stoppage, or very painful urination in old people; there may be bloody mucus or pus. Polytrichium juniperum tincture, five or ten drops at a dose every fifteen minutes for a few doses, then every two, three, four, or six hours; or a decoction by steeping it in water and half-teaspoonful doses given. Hyoscyamus, for weakeness, dribbling, or inability to retain the urine in elderly people. For children or young people who wet the bed the third dilution of the so-called mullen-oil, made from the buds and blossoms of the mullen, and introduced to the profession by Dr. A. M. Cushing of Springfield, Mass., is nearly an infallible cure.

Breast.—*Inflammation and Abscess of the Breast.*—The disease from which the female breast most frequently suffers is inflammation, followed by abscess. This may occur at any time, but most commonly it is within the first few weeks after childbirth. Generally within twenty-four hours after the birth of a child, the breasts become turgid and slightly hot, from the increased flow of blood which is directed toward them to supply the secretion of milk. In this excited condition, and indeed during suckling generally, they are peculiarly liable to become inflamed; cold, any slight bruise, such as that from a bone in the stays, over-distension with milk, or even mental excitement, may, any of them, give rise to the inflammation which ends in abscess. If from flatness of the nipple, weakness of the child, or any other cause, the milk is not well drawn out, measures which will relieve must be adopted. Various forms of breast-pumps are used, the suction being made through them, either mechanically or by the mouth. Some nurses have the art of drawing the breasts with the mouth more thoroughly than any instrument, and when such aid can be procured it is right to make use of it.

Symptoms.—The first symptoms of threatened abscess are pain and knotty hardness in the part; if the process goes on unchecked, there is much throbbing and sensation of weight, the skin over the part affected becomes red, gradually thins, and at last gives way, allowing the escape of the matter, occasionally mixed with milk. Some amount of fever accompanies the progress of the affection. After the discharge of the matter the abscess may quickly heal, or it may remain open and running for a considerable time.

REMEDIES.—Abscess or broken breast can almost always be prevented by covering them entirely and closely with adhesive or common sticking plaster. If this cannot be done on account of soreness, pack them with cloths wrung out of cold water, in which is a quantity of corn meal; wring pretty dry; cover well; change as often as they get warm or dry. Add tincture of Myrrh to water; Belladonna at first, if sore and painful. If they go on to suppuration,

to hasten it give Hepar sul., and it would be much better to give it as high as the thirtieth attenuation.

Bronchitis is inflammation of the membrane, lining the air-tubes, or bronchi. In its subacute and chronic forms it is one of the most common diseases, prevailing at all seasons, but especially in cold and damp weather.

Acute Bronchitis may commence directly in the chest after exposure to cold; but very often, particularly in children, the lining membranes of the eyelids, nostrils and throat are first affected, and the disease spreads downward into the air-passages of the chest. In the latter case, watering of the eyes, etc., precedes the actual bronchitic attack for a day or two. Acute bronchitis, as it occurs in the adult, is a severe disease, requiring prompt medical attendance.

The rapid progress which this disease sometimes makes, from its commencement to a fatal termination, renders the sending for medical assistance as quickly as possible an imperative duty; but the same reason renders it important that those around should be aware of the best method of treatment. Confinement to bed is a matter of course: foot-baths, hot bran-poultices to the chest, and warm diluent drinks are all serviceable.

The acute bronchitis of children is not usually so rapid and strongly marked a disease as that just described; it often begins with the irritation of the membrane of the nose and eyes, and extends itself into the chest. Languor, succeeded by fever, oppressed and quickened respiration, and cough, are the usual symptoms. Bran-poultices ought to be used to the chest. The warm bath may be useful in the first stage of depression; but when fever is high, it is not advisable. The bowels, of course, will require attention. It is of the greatest importance to attend to the atmosphere surrounding, either child or adult suffering from bronchitis: the chamber should be well ventilated, and the temperature not suffered to fall below 55° Fahr. Bronchitis in children is so hazardous and frequently so fatal a disease, that its domestic treatment ought never to be undertaken, except under necessity. Its exciting cause is almost invariably cold and moisture, particularly during the prevalence of east wind in the spring months; while careless and inefficient clothing among the poor, and absurd modes of dressing amid the higher classes, render children more susceptible of these injurious influences.

REMEDIES.—Aconite, if feverish, nervous, short dry cough that hurts. Belladonna, if the throat is red, painful, hoarse, and patient is stupid. Bryonia, if any motion aggravates; Hydrastis for old people. Kali bichromicum, if hoarse croupy cough with stingy mucus. Phosphorus, if there are pleuritic pains with tightness extending to the chest. Rumex, aggravated by deep breathing, talking, laughing, or cold air.

Bronchocele—Goitre.—These names are given to a swelling in the neck, caused by an enlargement of the thyroid gland, situated in front of the windpipe. The disease is confined to particular districts of country.

Full throat varies in size, from the enlargement so slight as to be scarcely perceptible—or even, in some eyes, to add grace to the neck—to a tumor many pounds in weight. In England or America, however, it seldom attains the immense size it does elsewhere. Bronchocele is much more common in females than in males; indeed, in this country it is rarely seen among the latter; and in both sexes, as a general rule, does not appear till after puberty; children, however, do suffer from it even from earliest infancy. The rise and progress of bronchocele are for the most part slow, and unaccompanied with pain; but occasionally rapid enlargement occurs, and then pain is severe. Coughs, child-bearing, strong muscular exertions, are all liable to induce and accelerate the progress of bronchocele: the monthly period also exerts considerable influence upon it. Females of lymphatic temperament are more liable to be attacked.

Bronchocele is a disease for the most part devoid of danger; the chief inconvenience attending it, when of large size, being impediment to the breathing, and fullness of the head arising from obstruction to the circulation in the vessels of the head and neck. The appearance of a large bronchocele is, of course, unsightly, although in those localities in which it prevails it is scarcely observed.

Various causes have been assigned for the production of bronchocele; but none with so much probability as that which attributes it to the regular use of water containing lime and magnesia—impregnations of the fluid found coincident with the disease.

REMEDIES.—Iodine and Spongia will nearly always cure.

Burns.—Cover thick with lather made of Castile soap. If it cracks, cover them with same and let it remain till it is healed.

Cancrum Oris is a species of mortification, affecting the cheek and gums. It occurs in children of weak, scrofulous constitution who are ill-fed and exposed to the influences of unhealthy habitations, and most generally is consequent upon acute disease, particularly measles.

Symptoms.—The usual first symptom of the disease is a red, hard, angry-looking spot on the cheek, which quickly opens into a gangrenous ulcer inside the mouth; the gums become affected, the teeth drop out, the breath, as might be expected, is unbearably fetid, and the extending ulceration goes on destroying the cheek and contiguous parts, till it is either stopped or death ensues.

REMEDIES.—Mercurius, if much saliva. Borax, if very sore; bathe parts frequently with tincture of Myrrh, so diluted with water it will not smart.

Carbuncle.—It should be treated kindly and never cut, but apply hot fomentations, cloths wet with hot water, and tincture of Myrrh should be added. If unable to prevent their forming, poultice with wild indigo-root, finely powdered, wet with chloride of limewater, adding to this tincture of Myrrh. Give Arsenicum for the burning, and Hepar sul. later to hasten suppuration.

Catarrh.—This being the most prevalent disease known, it requires a large number of remedies to combat it successfully. At the beginning, ordinary remedies for a cold in the head will suffice, but later, others must be added. Allium cepa, for bland-discharge from the eyes and burning excoriating discharge from the nose. Arsenicum, burning discharge, watery discharge with sensation as if the nose was stopped up. Berberis, purulent discharge from the nose, left nostril worse. Calcarea carb., for children with enlarged tonsils, scrofulous tendency, crooked legs.

REMEDIES.—Euphrasia, eyes inflamed, full of tears. Hepar sul., with croupy cough from exposure to cold winds. Nux vomica, dry nose at commencement, then fluent in daytime and dry at night. Costive, Pulsatilla, thick, yellow, greenish discharge, loss of smell and appetite, better out of doors, worse in a warm room. Sanguinaria, alternation of fluent running and stoppage of the nose.

Chilblains.—A chilblain is an inflammatory affection of the skin, more particularly of the fingers or toes caused by alternations of cold and heat, and is characterized rather by irritating and troublesome itching than by pain. Persons of fine skin, scrofulous constitution or languid circulation are most liable to suffer from chilblains, and old people and children more than persons of middle life. The sudden exposure of the skin when very cold to a high temperature is generally and justly considered to be an exciting cause of the affection; but one quite as frequent is keeping the surface in a state of artificial warmth by the use of sleeping-socks and hot applications in bed, or of fur-lined shoes and foot-warmers in the daytime. All these applications keep the skin in a continual state of unnatural perspiration, weaken its tone, and so render it more susceptible to the effects of cold when exposed to it.

REMEDIES.—Apis, red stinging. Anacardium, violent itching. Arsenicum, burning. Rhus tox., watery blisters.

Cholera, Asiatic or Malignant.—*Symptoms.*—The violence of its symptoms, and the fearful rapidity with which it often terminates life, render cholera one of our most alarming diseases. Occasionally, but more frequently in hot climates than in temperate ones, persons are, as it were, prostrated at once by the cholera-poison, and die, perhaps within an hour of the first attack, without any other symptom than total collapse of the powers of life. More generally the seizure is not so sudden: probably there has been slight diarrhea, or rumbling movements of the bowels, with sinking sensation at the stomach, for some

days previously; or, at all events, the person has felt unwell. When the disease sets in earnestly, which, in the larger proportion of cases, it does during the night, the patient vomits, and is purged with more or less frequency and violence, the evacuations quickly coming to resemble thin gruel or rice-water; cramps of the limbs succeed, the surface becomes cold, blue, bathed in sweat, and has, particularly the fingers, a peculiar shrunken, sodden appearance; the tongue is cold, the pulse imperceptible; the urine is suppressed, and the voice acquires a peculiar pitch of tone. Many die in this the collapse stage of the disease; but if it is passed through, reaction comes on, the surface gets warm, the thirst continues, the quick pulse becomes perceptible, the tongue is dry and brown, and delirum is present; in short, fever is established, and may end either in recovery or death.

TREATMENT.—During the prevalence of cholera, many err in making material changes in their ordinary modes of living, and by so disordering the regularity of the functions lay themselves open to attacks of the disease. It should be understood that whatever tends to lower the standard of health favors the attack of the disease. There is, however, one important precaution which ought to be observed at all times, indeed, but more particularly during the epidemic of cholera; the perfect purity of the drinking-water should be ascertained, and its freedom from all decomposing organic matters made certain. Care is also to be observed not to take active purgatives, particularly salines, which produce watery evacuation; for whatever produces free action of the bowels apparenttly increases the susceptibility to attack. For this reason, too, *the slightest tendency to diarrhea should be at once arrested* by the aromatic spirits of camphor, repeated as often as requisite, and the use of milk and farinaceous preparations containing gelatinous food. The speedy adoption of these measures in places distant from medical assistance, might do much to check the disease.

REMEDIES. — Arsenicum, burning, exhausting discharges, thirsty, drinks little and often. Camphor, vomiting, diarrhea with severe cramps in bowels and limbs. Veratrum alb., profuse vomiting and watery discharges, cold flesh, cramps. In this disease give medicine every five minutes at first; keep patient warm.

Colic is the painful spasmodic contraction of the muscular fibers of the bowels, occasioned by the presence of an undue amount of wind, or of some irritating matter; it may also be brought on by exposure to cold.

REMEDIES.—Hot applications to abdomen. Carbo veg., if sour eructations. Colocynth, sharp, cutting pains, obliging one to bend double which relieves. Dioscorea, severe, dull or snarp pains, better bending backwards. Chamomilla, if the pain begins in small of back and runs down to region of the bladder with vomiting. Nux vomica, dull aching pains, if caused by unripe fruit. Costive, Pulsatilla, from food, especially greasy food. Plumbum, violent colic with great contraction of abdomen in region of navel.

Constipation.—For a general constipated habit, Nux vomica at night, Sulphur in the morning. Bryonia, for large feces; Nux vomica, small balls; Opium, small dark balls. Ratanhia, for soreness of rectum, bowels costive, or loose slimy or bloody discharge. It may also be given three grains rectal suppositories at night.

Convulsions. — Convulsions may be either general or partial, affecting only the muscles of the eyes or eyelids, of the face, or of one of the extremities, or of one side of the body; or they may shake the whole frame in convulsive agitation, such as occur in epilepsy.

When a Child is seized with Convulsions, the most generally available remedy is the warm bath, and if used with judgment is a good one. The temperature should be 98°; if the child is strong and plethoric, it should not be immersed above the waist, and, while in the bath, cold should be applied to the head; if the child is weak, it may be put in the water above the shoulders; in either case the immersion is to be continued for twenty minutes, and an injection of warm water and soapsuds immediately administered. When the child is taken out of the bath, it should at once be wrapped up in warm blankets and laid in its cradle or in

bed, and cold used to the head, or not, as thought well; and if the fits still continue, mustard-plasters made with half oatmeal may be applied to the legs, but must be removed as soon as the skin is well reddened.

When an Adult is seized with Convulsions, the treatment, conducted upon the same principles, must be very similar to that recommended for a child, with exception of the bath, which cannot be conveniently used; in its stead, a warm bed, with hot applications to the feet, limbs, etc., must be substituted, and mustard-plasters may be used more freely. If there is much heat or excited action about the head, it should be shaved, or the hair cut close off, and cold or iced applications freely employed. In following out these directions, the non-professional will be doing much, and indeed all they can legitimately do during the longer or shorter interval that must necessarily elapse before the case is seen by a medical man. Lastly, it must be borne in mind that convulsions are not unfrequent in extreme intoxication, and also in poisoning from narcotics, such as opium; their occurrence from such causes would, of course, materially modify the treatment. In children particularly, they are unquestionably the frequent result of the administration of laudanum, and more frequently still of quack soothing medicines and elixirs.

REMEDIES.—Chamomilla, for teething children. Spigelia, if caused by worms. To relieve spasms, let them inhale Amyl nitrite, one part, alcohol, nine parts, till relieved.

Cramp.—Cuprum for cramps anywhere. Phosphorus for cramps in limbs, especially in pregnant females.

Croup is an inflammatory affection of the larynx and upper portions of the air-passages. It is peculiar to children—males are more liable to it than females—and when one in a family suffers from the disease, the rest almost certainly have a tendency to it. The malady seldom occurs during the first year of life, but is most frequent in the second; at puberty the tendency to it ceases, although cases of genuine croup have occurred after that period. The rapidity with which croup at times progresses to a fatal termination, and the distressing character of the malady, always render it a dreaded disease.

Symptoms.—Croup may begin very suddenly. A child goes to bed to all appearance perfectly well, and in the course of two or three hours comes a cough which strikes even the most unobservant as peculiar, and which, falling upon the ear of the anxious parent who has ever heard it before, tells at once of danger. The child seems as if it coughed through a brazen tube. Perhaps at first the little invalid is not awakened, and, if now visited, is found flushed and fevered, moaning slightly, perhaps, and restless, the breathing slightly quickened; the cough comes again, the child awakes or is awakened: if it speaks the voice is hoarse; if it cries, hoarser still. Should the disease be neglected at this time, or go on uncontrolled, the cough, still retaining its peculiar character, becomes more frequent; the breathing, quickened, is also accompanied by the characteristic dry wheezing occasioned by narrowing of the passage through which the air is drawn.

REMEDIES.—Aconite, sudden attacks in night, high fever, child throws itself around. Hepar sul., worse in the morning, rattling cough but no raising of phlegm. Hoarse, dry, barking cough. Kali bichromicum, worse early in morning, the mucus in throat is very stringy, hard to remove. Spongia, hoarse, sawing sound and gets worse in the evening. Spasmodic cough that comes first suddenly in the night is not generally dangerous; but a slight croupy cough at night, well the next day, and reappearing the next night is always dangerous, liable to result in membranous croup. Benninghausens' treatment. Aconite, Hepar sul. and Spongia in alternation or rotation has proved very successful in many cases. A very efficient help is a cold damp compress not too wet, well covered up and changed as often as it gets warm or dry. The remedies at first can be often repeated. Kali bichromicum had better be given the second or third decimal trituration. The other remedies act better higher.

Diarrhea.—Antimonium crudum, disordered stomach, tongue coated white, bitter vomiting, worse after eating or drinking. Arsenicum, watery, burning discharges,

worse about midnight, prostration, great thirst, but drinks but little at a time. Bryonia, from change of weather, eating fruit; painful, worse from motion. Calcarea carb., during dentition, child light skin, large head and crooked legs. Chamomilla during dentition, discharges green, painful, watery, looks like chopped eggs. Mercurius, green or bloody discharges, great straining at stool, can't get done. Rheum, greenish-brown fermented discharges, sour discharges, child smells sour.

Veratrum alb., profuse vomiting and diarrhea, cold skin.

If thirsty during diarrhea, the patient should be allowed to drink large quantities of pure cold water, and quite a quantity at a time, as a small quantity is liable to be thrown up at once.

Dislocations.—It is necessary to speak of only one dislocation, and that is, the backward dislocation of the thumb, which is considered and given in the books as one of the worst to reduce. It is advised to apply straps, to pull even with pulleys is recommended. Sometimes it is left dislocated, sometimes the ligaments are cut, destroying the use of the joint, and the thumb has been amputated; still it is one of the easiest to reduce. Grasp the injured hand, palm down, place the end of both thumbs against the end of the dislocated bone, place both of your fore-fingers under the middle of the thumb, then with the fore-finger lift the dislocated thumb to a standing position at right angles with the connecting bone; then give a quick, strong push with both thumbs, pushing it off the other bone; remove the fore-fingers, and with the thumbs bend the thumb to its natural position. If done soon after the injury it is almost painless.

If it has been done some time, and it is swollen, it may be necessary to give an anesthetic.

Dysentery.—Cantharis, for painful bloody discharges with painful urination. Colocynth, yellow, frothy or bloody stools with severe colicky pains, causing the patient to bend double, which gives relief. Mercurius, green, frothy or bloody discharge, worse in cool evenings. Painful urination.

Headache.—Avena, pain in back of head and neck. Belladonna, beating, throbbing headache, worse lying down, red face. Bryonia, head painful and sore, worse on moving. Calcarea phos., headache of school girls. Glonoine, dark red face, throbbing headache, better lying down, head feels big.

Nux vomica, dull pain, worse in front of head, nausea, constipation. Pulsatilla, headache from indigestion, especially from greasy food, better out-of-doors, worse in room; particularly adapted to females. Sanguinaria, pain begins in the back of the head, extends forward over right eye.

Heart.—Digitalis is the remedy most frequently used for weak heart action, but has to be given in large doses of the fluid extract, and that is quite apt to produce nausea and vomiting. Glonoine is the remedy for rapid action, especially if there is rapid breathing as after running. Spigelia is beneficial in neuralgia of or about the breast.

Veratrum viride can be given for rapid action of the heart, but must be stopped if it causes nausea. Amyl nitrite, one part to three to five, according to the patient, of alcohol and inhaled.

Hemorrhage. — Hemorrhages may be arterial or venous. If arterial, the blood will be bright, and comes in jets or spurts, while venous blood is dark and oozes constantly. The arterial is the most dangerous. Hamamelis for dark blood. Ipecac for bright blood from mouth or nose, especially if there is nausea. Phosphorus for hot bright red blood.

Indigestion,—Nux vomica, where food distresses, bowels constipated, dull, frontal headache. Dioscorea for chronic indigestion with constipation, pain in bowels. Pulsatilla, food distresses, bowels loose, feels better in the open air. Better for indigestion, especially if their is diarrhea, than all the Peptones in the market, is six grains of Codea well mixed in a mortar with one ounce of phosphate of lime, then add and mix in the same way one ounce of Subnitrate of Bismuth. Take about five grains before and after each meal, wash it down with cold water.

Lumbago.—Berberis vulgaris is the best remedy for general lame back. Belladonna, for simple aching. Bryonia, lameness, worse moving. Rhus tox., better by continual moving.

Measles is one of the eruptive fevers, which most persons go through once in a lifetime, and generally during childhood; the disease usually occurs as an epidemic, and is contagious.

The First Symptoms of measles are those of a feverish cold; there is shivering, headache, loss of appetite, and perhaps vomiting; the eyes look red, and, as well as the nose, furnish increased watery discharge; there is hoarseness and cough. On the fourth day of the disease, or in from seventy to eighty-four hours after the first symptoms of sickness have shown themselves, the peculiar eruption of measles begins to appear, generally about the forehead, then on the neck and arms, and thence extends to the trunk and extremities; at first the eruption shows only in red points, not unlike fleabites, but these soon enlarge into rather broad, slightly purplish, crescent-shaped spots, which are just perceptibly elevated above the skin. At this period the skin is hot, there is a good deal of general fever, with thirst, and much hoarse cough, with quickened breathing. After remaining out about four days, the eruption—first, of course, on the face—begins to decline, and by the seventh dav it has generally disappeared, leaving the skin slightly roughened, followed by separation of the cuticle in small scales.

TREATMENT.—In any case of measles, the safest plan is, of course, to have medical attendance; very many parents, however, in the humbler classes, when the prevailing epidemic is mild in character, take the matter in their own hands, and do little more than keep their children in bed for a day or two, if they do even that. There is no question that a mild attack of measles will get well without any treatment; but in even the mildest, ordinary care to guard against cold should be observed, this being, of course, requisite in proportion to the season of the year. If the attack be a smart one, the person should be kept in bed and moderately warm, allowed to drink freely of diluent and especially of demulcent drinks, such as barley-water. The diet should consist of milk and farinaceous matters; cooling fruits and such like may be allowed, the bowels at the same time being attended to, but not purged. Should the eruption of measles seem tardy in coming out, or come out small or insufficiently, or, after having shown itself, should it disappear again suddenly and before the time of its regular decline, danger must be apprehended. The warm bath is at once the safest and the best remedy; the child being kept in the water—temperature 98°—from ten to twenty minutes, according to age.

REMEDIES.—Aconite, for the chills or fever. If this does not relieve, Bryonia may be alternated with it. Bryonia for the cough; Drosera for the cough that may follow. Pulsatilla for the eye, nose and throat symptoms. If the frequent repetition of Aconite and Bryonia does not bring out the eruption the patient may take a drink of sour cider in which is a small powder of soda or saleratus, to be drank while foaming. If this fails to bring out the eruption, a cold wet sheet pack, rightly applied, will do it.

Menses.—Aconite, feverish, nervous, severe, dull cramping pain in bowels and pain in back; she has to bend double. Stoppage of flow. Belladonna, violent throbbing headache, violent bearing down. Sleepy but unable to sleep, delirious. Caulophyllum, labor-like pains. Cimicifuga, severe pains, extending down the limbs. Pulsatilla, mild, tearful disposition, hystericaly weeps, colicky pains, suppressed, scant, and irregular flow.

Senecio gracilis, for suppressed menses, called Female Regulator. The most potent remedy for pains is the inhalation of a mixture of Amyl nitrite, one part, alcohol, three parts. Inhale as often as is necessary on account of pain.

Mumps.—A contagious epidemic disease, which consists of inflammation of the salivary "parotid" glands, situated on either side of the lower jaw. It commences with more or less fever; shortly, swelling at the angle of the jaw appears, and spreads gradually to the face and neck in the vicinity of

the gland, causing much difficulty and pain when the jaws are attempted to be opened: on the fourth or fifth day the swelling begins to subside.

REMEDIES. — Belladonna and Proto-Iodide of Mercury, with the patient kept warm, is generally all that is required.

Neuralgia.—This is perhaps one of the most painful affections to which the human body is liable. In most instances the pain is the only symptom; in some it is accompanied with marked constitutional or local ailment. The most general seat of neuralgic pain is in the head or face; but the fingers, the chest, the abdomen, etc., may any of them constitute its site. When the great nerve of the leg is affected with neuralgia, the disorder is known as *Sciatica*.

REMEDIES. — Belladonna for neuralgia of the head, or in any part, if pain comes suddenly and goes suddenly; Avena for pain in back of head. Gelsemium, pain, with dark red face and pain in side of face. Kalmia Latifolia is the remedy for facial neuralgia. Glonoine, pain in head, head feels large, and the pain is relieved by lying down; worse on rising. Nux vomica, neuralgia of the head, begins in the morning, lasts all day, better in the evening, with sour, bitter vomiting. Sanguinaria, pain begins in back of head, extends over to the front of the head, and settles over right eye.

Palpitation of the Heart.—If it appears occasionally, it is doubtless occasioned by some disturbance of the stomach or liver, and the treatment should be directed to the offending organ.

Piles, or Hemorrhoids, are tumors which form at the verge of the anus or fundament, and may be situated either within or without the bowel: they are either what are called "*Blind*" or they are *Bleeding Piles*. Piles are often constituted by an enlargement or "varicose" condition of the veins situated about this part, this enlargement being caused by whatever tends to obstruct the return of the blood through the veins of the abdomen generally; thus, affections of the liver, constipation, with overloaded bowels, pregnancy, etc., are all frequent causes of this form of piles, in which the swellings are generally smooth and of the color of the surrounding skin.

REMEDIES.—Æsculus hip., protruding piles, bleeding slightly, costive, lame back. Aloes, protruding piles, like bunches of grapes hot and sore, relieved by cold or hot water, prolapsus of the rectum. Collinsonia, piles with sensation as there were sticks in the rectum. Graphites, protrusion of rectum with stool, or passing of wind. Ignatia, bleeding piles with pains shooting high up into the rectum. Hamamelis, very sore, bleeding piles. Nux vomica, after taking purgative medicines, persons of sedentary habits, after liquors of any kind, dull headache, costive. Podophyllum, piles and protrusions of rectum of long standing. Ratanhia, protruding piles, hard or soft stool, burning and soreness of rectum. Rectum very sensitive. Three grains Ratanhia suppositories may be used. Sulphur, all kinds of piles, constant ineffectual urging to stool; thin bloody stools. Hot water is the best general application.

Pleurisy.—This is an inflammation of the pleura, or serous membrane which covers the lungs and lines the greater part of the cavity of the chest.

Causes.—Exposure to wet and cold is the most common cause, but it may come on after an accident in which the ribs are broken, or cases of stabbing in the chest, or from a gunshot wound or other internal injuries.

Symptoms.—The patient first complains of a severe catching pain in the affected side, and this is made worse on taking a deep inspiration, or coughing: the pain is usually confined to one spot, and on listening there one may hear a rubbing sound, due to the roughened surfaces moving on each other.

REMEDIES.—Aconite, for fever, if chilly with sharp cutting pains. Belladonna, sharp cutting pains that come and go suddenly with beating headache. Bryonia, with or without fever, hurts to breathe or move. Phosphorus, sharp cutting pain that comes occasionally without fever.

Pneumonia.—*Symptoms.* — This is an inflammation of the proper substance of the lungs. The disease generally announces itself with a chill or chilly feeling, which lasts from half an hour to an hour or two before a sensation of heat can be produced.

The temperature will rise on the first day, and sometimes reaches 103°–105°. There is pain in the back and loins, and loss of appetite and flushed face. The first dedided symptom of pneumonia will be shortness of breath, so that only short sentences are spoken without the need of breathing, and there is a "stitch" in the side. Do not postpone sending for a doctor, especially if the patient is old, feeble, or a child.

REMEDIES. — When the premonitory symptoms appear, such as being chilly, aching all over,—head, body and limbs,—a little difficulty of breathing, pneumonia is pretty sure to follow, unless energetically combated.

In such cases, it is well to alternate Bryonia and Aconite; a dose every fifteen minutes till relieved, then every half hour or hour. If this does not abort it, and it will nearly always do it, and there is pain in lungs and troublesome cough, give Phosphorus. After the pain is relieved, and there is a tight cough give Hepar sul.; if a loose cough, give Tartar emet.

Quinsy Sore Throat. — Belladonna at first. If that, with cold water compress on outside, does not abort it, give Hepar sul., and poultice with hot boiled potatoes.

Rheumatism.—Under this well-known name are comprehended two forms of disease, differing greatly from each other—so greatly, indeed, as to be distinguished even by the unprofessional. The acute form of rheumatism, frequently called "rheumatic fever" by medical men, is popularly named "the rheumatics," while the chronic form, the "chronic rheumatism" of the physician, is known to the public as simply "rheumatism," or, in vulgar parlance, as "the rheumatiz." "Muscular rheumatism" is also included under the term rheumatism.

REMEDIES. — Aconite, fever, dry, hot skin, stitching pains in chest. Belladonna, tearing cutting pains deep in bones, high fever, dry skin, thirst, worse at night, flesh so sore don't dare let one come near the bed. Bryonia, swelling of any muscles, great pain on the slightest motion, thirst for large quantities of cold water. Ammonium phos., for enlargement of joints. Artemisia abrotanum, for severe pain before there is any swelling. Caulophyllum, for rheumatism of fingers or wrist joints. Cimicifuga, severe pain in chest. Hamamelis, internal and external for great soreness of flesh. Ledum, pain in limbs, hip joint and knees, worse in warm bed. Mercurius, tearing pains, worse at night and damp weather, profuse perspiration which gives no relief. Rhus tox., caused by exposure to wet or damp weather, worse during rest and beginning to move, but better by continued motion. Spigelia, affecting the heart.

Rickets is a disease in which the bones lose their earthy constituents, and consequently their natural hardness, becoming soft like gristle, and somewhat brittle, so that they are not only easily bent, but easily broken. The term rickets is usually applied to this softening, when it occurs in childhood; but a similar disease also attacks adults, especially females. Rickets is a constitutional disease, and is very generally associated with a tendency to scrofula, either hereditary or engendered by poor living and unhealthy influences, such as deficient ventilation and light, impure damp air, and bad food.

REMEDIES.—Calcarea carb., or calcarea phos., will cure nearly every case if given early and continued.

Saint Vitus's Dance, known to medical men by the name of "*Chorea*," is a disease strongly indicative of nervous disorder; its precise nature, however, is at present obscure. Probably it may be occasioned by direct causes, that is, by causes seated in the great centers of the nervous system, or by indirect causes, which act by "reflex action."

Symptoms.—The most manifest symptom of St. Vitus's dance is continued involuntary action of the voluntary muscles, to a greater or less degree—the extent of the muscles affected, and the intensity of their affection, varying with the severity of the disease. The disease generally commences with twitching about the face or neck, or in a particular limb, gradually extending to one side of the body, or to the whole body, as the case may be. Pain is seldom complained of, but it does sometimes occur in the head.

REMEDIES.—Agaricus muscarius, is the most potent remedy. Helleborus, if brain fected. Ignatia, for twiching of single muscles.

Scarlatina and Scarlet Fever.—Scarlet fever belongs to the class of eruptive fevers, and is characterized by symptoms so well marked that it can scarcely be mistaken for any other disease, even by unprofessional persons.

The *first symptom* complained of, in the incipient stage of scarlet-fever, is sore-throat, either accompanied or quickly succeeded by the usual symptoms of a feverish attack, shivering, headache, loss of appetite, generally vomiting, followed by heat of skin, quick pulse, and thirst. The eruption appears early, on the second day after the first symptoms of indisposition. It first shows itself in the form of minute red points on the chest and arms, especially about the elbows, the points becoming more numerous till they form one diffused surface of a tolerably bright scarlet eruption, which extends to the neck, face, abdomen and body generally.

REMEDIES.—Belladonna is nearly a sure preventive of pure scarlet fever. Aconite, in the commencement, nervous, high fever, and delayed eruptions. Belladonna, for fever, headache, sore throat, stupid. Cantharis, for suppressed urination, and sometimes Apis for the same trouble with dropsy. If it puts on a malignant form, Ailanthus is the remedy or alternated with Lachesis. For the dropsy, if Apis does not relieve, make a decoction of the common white field bean (bean and pod), and let them drink freely of it for a few hours.

Typhoid Fever.—Probably no other disease has been as unskillfully and unsuccessfully treated as typhoid fever. A number of years ago a professor in Harvard Medical School said, "Gentlemen, I do not believe in homeopathy, for there is nothing to it; but the homeopathists beat us in fevers, and how do they do it? They let theirs alone, and they get well; we physic ours and they die." At this time many physicians give no medicine, but watch and feed the patients. None but an educated physician should treat this disease, yet any intelligent person could watch and feed them. It is eminently a disease of the intestinal tract, and this should be kindly treated, and allowed to rest. Food cannot be digested, and any food is a foreign body if undigested, causing irritation and fever. When milk is given, the water invigorates, the solid parts excite the fever, and for a little the patient seems stronger and better, but reaction soon comes and the milk stimulus must be repeated. The milk is not digested but passes through the intestines an irritant or excitant. If water is given, the patient revives as well as with the milk, and there is no corresponding depression; the bowels are kept quiet, are able to digest and assimilate the food as soon as the fever turns.

If plenty of good cold (not icy cold) water is given the fever rarely runs over three weeks and not often over two. The water should be used externally and internally, and unless there is some complication or serious outside influences the patient will very rarely die.

REMEDIES.—Arsenicum, for weak debilitated persons, tongue dark, great thirst, drink little and often, brownish, watery, involuntary discharges from bowels, suppressed or involuntary urination. Baptisia given early may abort it; later the patient thinks there are two parts of them that they can't get together. Belladonna, great congestion of the brain, drowsy but unable to sleep, delirium, tries to run away. Bryonia, delirious at night, dull piercing headache, eyes dull, watery; worse from opening eyes or from motion, tongue coated thick, white or yellow; later, brown and dry; difficult breathing, thirsty for large quantities of cold water. Cantharis, painful or suppressed urination. Carbo. veg., cold breath, collapse, threatened paralysis of lungs. Hyoscyamus, wild delirium; Muriatic acid, for great prostration with tendency to slide down in bed. Phosphorus, if the lungs become complicated. Rhus tox., talks to himself, constant muttering, bleeding from nose; tip of tongue red, bowels loose, worse at night, patient better by moving.

Worms.—Calcarea carb. Cina., pinworms. Ratanhia is a specific.

Wounds.—For cut wounds Calendula (from marigold flowers) is the best application, and a wash of the same for other wounds.